

 **element DCX** 

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Veterinary Chemistry Analyzer Product Manual



Thank you for purchasing the Element DCX Veterinary Chemistry Analyzer

## Intended Purpose

The Element DCX Veterinary Chemistry Analyzer (henceforth, the Element DCX) is an in vitro diagnostic medical device for veterinary hospital use to automatically quantitate the concentration or the activity of the components in blood by colorimetric end-point, rate and ISE tests, using the DRI-CHEM SLIDES. Do not use the equipment for other purposes.

This equipment must be operated by Healthcare professional appropriately trained for its intended purpose and correct operation.

Before using this equipment, please read this manual carefully to follow the precautions so that you can operate it correctly.



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The Element DCX Veterinary Chemistry Analyzer is a diagnostic medical device for veterinary hospital use.

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This section contains the safety precautions that must be followed for safe operation of the Element DCX. Before using this analyzer, please read this chapter carefully and follow the precautions given, so that you can operate it correctly.

## 1.1 Symbols Used in This Manual

The following section lists the meaning of precautions (marks) used in this manual.



### WARNING

Indicates hazardous situations that may lead to serious injury, death, or the transmission of infectious agents if the precaution is not followed.



### CAUTION

Indicates hazardous situations that may lead to minor injury, moderate injury, or physical damage if the precaution is not followed.



### IMPORTANT

Indicates improper handling that could have an adverse effect on the accuracy of the measurement values if the precaution is not followed.

**NOTE:** Indicates procedures requiring special attention, instructions that must be followed, supplementary explanations, etc.

## 1.2 Operation Precautions



### CAUTION

Before using this equipment, please read this Instruction Manual carefully so that you can operate the equipment correctly.



### CAUTION

Whenever you operate this equipment, be sure to observe the precautions described in this manual. Failure to do so may subject you to injuries, cause property damage, or produce incorrect measurement results.



### CAUTION

The operators must be sufficiently trained for the usage of sampler cover lock key and observe its usage method and precautions. Store the lock key carefully so that it is not lost. Refer to Section 1.14



### CAUTION

Do not remodel the Element DCX. Otherwise, the safety will not be guaranteed.



### CAUTION

The effective period of service (service life) of this analyzer is 6 years after delivery (as long as usage precautions are observed and regular maintenance is performed). If you will use the analyzer after the service life expires, consult with the manufacturer/seller beforehand. The use of medical equipment that has exceeded its service life may increase the chance of safety and performance problems.



### CAUTION

Use consumables on or before their listed expiration date.

## 1.3 Biohazards and Disposal



### WARNING

Items such as measured slides, tips, mixing cups, sample tubes, and straws coated with samples such as blood and urine, and cotton swabs and cloths used to clean the equipment are infectious industrial waste. Process this waste in compliance with any applicable regulations in your country, such as by incineration, melting, sterilization, or disinfection. Furthermore, when entrusting disposal to another party, request processing from a contractor with a license for special management of industrial waste processing work.



### WARNING

Items that may be contaminated with blood or urine are infectious industrial waste. When discarding the main unit, follow applicable regulations in your country and dispose of it appropriately.



### WARNING

Before discarding the main unit, you must delete the measurement results (personal information) stored on the main unit. Contact Heska's Technical Support Services before discarding.



### WARNING

When handling samples (blood or urine) and performing maintenance (cleaning the analyzer), always follow biohazard procedures (wear gloves, a lab coat, and safety goggles) in accordance with the sample handling rules of your facility. If you accidentally touch a sample, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.



### WARNING

Do not touch used slides and tips with bare hands as this may cause contamination. If you accidentally touch a contaminated consumable, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.



### WARNING

When samples come in contact with the analyzer, immediately clean and disinfect it.

## 1.4 Warnings Regarding Explosives



### WARNING

As this equipment is not explosion-proof, be sure not to use flammable and explosive gas around the equipment.

## 1.5 Warnings Regarding Electric Shock



### WARNING

- The voltage supplied to the equipment is AC 100 - 240 V. To avoid electrical shock, observe the following precautions.
- Avoid installation locations in which water may splash on the equipment.
- Make sure that the equipment is properly grounded to a protective earth lead for indoor wiring.
- Make sure that all cables have been properly connected.



### WARNING

Plug the power cable of the equipment into an outlet with a grounding receptacle. Otherwise, there is risk of electrical shock.



 WARNING

When plugging the power cable in or removing it from an outlet, be sure to hold onto the plug body, not just the cable. Otherwise, the power cable may be damaged and cause electric shock or fire.

 WARNING

Do not remove covers or other parts that are secured with screws. Doing so may result in electrical shock from exposure to hazardous voltage or injury from moving parts.

## 1.6 Electromagnetic Compatibility (EMC)

This equipment conforms to the following emission and immunity requirements:

- FCC Part 15 Subpart B, Class B
- ICES-003 Issue 6, Class B
- IEC 61326-1:2012 (Class B)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the manufacturer or field service technician for help.

 CAUTION

Do not use other devices (such as mobile phone) which generate and can radiate radio frequency energy near the Element DCX. Otherwise, physical damage or malfunction on the Element DCX may occur.

## 1.7 Caution Regarding Moving Parts

 WARNING

Do not place your fingers near moving parts (sampler and consumable disk) when operating the equipment, including during maintenance.

Also be sure not to get your fingers, hair, clothing, or accessories caught in moving parts.

 WARNING

During sample processing, ensure the sampler cover is closed and locked with the sampler cover lock key to prevent injuries and biohazards. If your finger touches a tip that has sample inside, the sample may scatter and cause infection.

When the display reads [Ready to test], the sampler cover can be opened.

## 1.8 Installation Locations



### WARNING

Plug the power cable of the equipment into an outlet with a grounding receptacle. Otherwise, there is risk of electrical shock.



### CAUTION

- Avoid the following installation sites.
- Places where spills or water leakage may occur.
- Places where the equipment is exposed to direct sunlight.
- Places near sources of heat such as heaters.
- Places where the temperature may drastically change.
- Places where the equipment is subject to vibration or its support table is unstable.

1. Install the equipment in the following environmental conditions.

Installation environment:	Indoor use (do not expose to direct sunlight)
Illumination:	6,000 cd/m <sup>2</sup> (lux) or less(3,000 cd/m <sup>2</sup> (lux) or less when using the sample barcode reader)
Atmospheric pressure:	810 hPa or more, equivalent to 6561.68 ft in altitude (2,000 m)
Transient overvoltage category:	II
Pollution degree:	2
Ingress protection rating:	IP00 (No Protection)
Operating temperature:	59.6°F to 89.6°F (15°C to 32°C)
Operating humidity:	30 to 80% RH (no vapor condensation)

2. Use the equipment under the following electrical specifications.

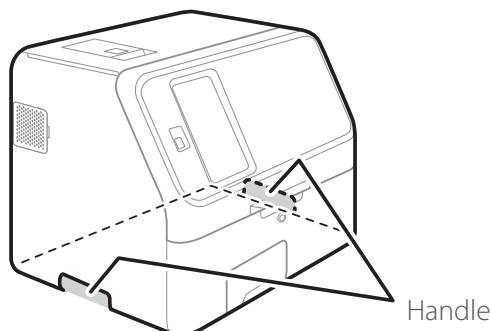
Power supply voltage:	single phase AC 100 – 240 V ±10%
Frequency:	50 Hz to 60 Hz
Consumption current:	1.9–0.8 A
Type of protection against electrical shock:	CLASS 1 EQUIPMENT

3. Use an independent outlet separate from other equipment.
4. Make at least 10 cm of space behind and beside the equipment.
5. Unplug the equipment from the AC outlet if it will not be used for an extended period of time.



### CAUTION

Hold the handle of the device when lifting or moving it.





#### CAUTION

- When moving the device to another installation location, remove all slides, samples, diluent, reference fluid, mixing cups, tips, and other consumables beforehand.
- Do not set the device on its side or upside down while moving it.
- Place the device on a flat and stable stand.
- When the device is subject to vibrations, such as when being moved by vehicle, it is necessary to secure the moving parts within the device. Contact Heska's Technical Support Services.
- The weight of 27kg is supported by 4 portions of rubber feet. The load on each portion is approx. 7kg. Make sure that the load bearing of the table at the installation location is sufficient.
- Failure to observe these precautions may result in unexpected errors or equipment malfunctions.



#### IMPORTANT

When wax was used to clean the floor of the installation location, make sure that wax will not adhere to slides and the device. If wax has adhered, the measurement results may be affected.

### 1.9 Action for Malfunction



#### CAUTION

When the equipment generates unusual noise, smell, or smoke, immediately unplug the power cable, and contact Heska's Technical Support Services.



#### CAUTION

Do not place any objects near the wall outlet so that the power cable can be easily unplugged.



#### CAUTION

In case of emergency, clearance at the back of the equipment is required so that the power cable can be removed from the inlet of the equipment.

### 1.10 Measurement Results



#### IMPORTANT

Make a diagnosis in a comprehensive manner, considering other relevant test results or clinical symptoms.



#### IMPORTANT

When an equipment problem (error) appears before or during measurement, or a warning appears in the measurement results, the measurement results may not be accurate. Refer to Chapter 8, Troubleshooting, and then rerun the measurement.



#### IMPORTANT

To maintain the accuracy of your test results, it is recommended to perform quality control on routine bases by use of control fluids. Refer to Section 7

## 1.11 DRI-CHEM Slides

**NOTE:** For the remainder of the manual, DRI-CHEM slide is shortened to “slide”.

### CAUTION

Please confirm the usable slides for this device. Contact Heska’s Technical Support Services for assistance.

### WARNING

Do not touch used slides with bare hands as this may cause infection. If you accidentally touch an item, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.

### WARNING

Used slides are infectious industrial waste. Process this waste in compliance with any applicable regulations in your country, such as by incineration, melting, sterilization, or disinfection. Furthermore, when entrusting disposal to another party, request processing from a contractor with a license for special management of industrial waste processing work.

### CAUTION

Please read the Instructions for Use of the slides carefully and follow the instructions.

### IMPORTANT

- The slides should be stored in a refrigerator still wrapped to avoid humidity, light, and heat.
- Take out the required number of slides from the refrigerator, and allow them to reach room temperature for 5 minutes or more with the condition of the individual package before unwrapping and using them. Otherwise, the measurement results and the analyzer operation may be affected.
- Complete the measurement within 30 minutes after unwrapping the individual package.
- Do not touch the center part (both sides) of a colorimetric slide.
- Do not touch the thread bridge part of an electrolyte slide.
- Do not scratch the identification information on the back of a slide.
- Do not reuse a slide.

**NOTE:** Slide packages and containers for liquids such as diluent and reference fluid may change without notice.

## 1.12 QC Card System

1. A QC card is packed together with CM (Colorimetric) slides in the same box. Before you start using a new lot of CM slides, read the QC card using the card reader.

The analyzer can record up to 5 lots per test, so you can mix and use slides of different lots. Store the read QC card in the box it came in until the accompanying lot of slides has been used up.

**NOTE:** When QC information exceeds 5 lots, the oldest QC information is deleted. Slides without QC information cannot be measured.

2. A QC card contains the slide test name and the correction coefficient corresponding to the manufacturing number (lot). Always use slides from the same box.

## 1.13 Handling Samples

### WARNING

When handling samples (blood), always follow biohazard procedures (wear gloves, a lab coat, and safety goggles) in accordance with the sample handling rules of your facility. If you accidentally touch a sample, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.

 IMPORTANT

Sample preparations differ depending on the test. Read the “Instructions for Use” of the slides.

 IMPORTANT

When using plasma or serum, check that the samples have not undergone hemolysis, and that they do not contain any fibrin deposits.

### 1.14 Sampler Cover

 WARNING

During sample processing, ensure the sampler cover is closed and locked with the sampler cover lock key to prevent injuries and biohazards. If your finger touches a tip that has sample inside, the sample may scatter and cause infection. When the display reads [Ready to test], the sampler cover can be opened.

### 1.15 Diluents and Reference Fluid

 CAUTION

To ensure safe handling of diluent and reference fluid, refer to the handling methods in the “Instructions for Use” of each fluid or follow the chemical handling rules of your facility (wear gloves, a lab coat, and safety goggles). If you accidentally touch an item, immediately rinse the contaminated body part thoroughly under running water. Seek medical assistance if necessary.

 IMPORTANT

For diluents used in measurements that require dilution, refer to the “Instructions for Use” of the slides.

 IMPORTANT

Use the reference fluid with the ISE slides for ISE measurements. Refer to the “Instructions for Use” of the slides.

 IMPORTANT

Use only specified products. Otherwise, errors or malfunctions may occur.

### 1.16 DRI-CHEM AUTO TIPS, Sample Tubes, and DRI-CHEM MIXING CUPS

**NOTE:** In this manual, DRI-CHEM AUTO TIPS may be shortened to “tip”, Sample Tube to “tube”, and DRI-CHEM MIXING CUPS to “mixing cup”.

Element DCX performs sample application automatically via the sampler. However, it is necessary to prepare dedicated DRI-CHEM AUTO TIPS, Sample Tubes, specified blood collection tubes, and DRI-CHEM MIXING CUPS.

The FUJI Sample Tubes include the following types.

- FUJI HEPARIN TUBE 1.5 mL
- FUJI HEPARIN TUBE 0.5 mL
- FUJI PLAIN TUBE 1.5 mL
- FUJI PLAIN TUBE 0.5 mL

 WARNING

Do not touch used tips, tubes, and mixing cups with your bare hands as this may cause infection. If you accidentally touch an item, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.



#### WARNING

Used tips, tubes and mixing cups are infectious industrial waste. Process this waste in compliance with any applicable regulations in your country, such as by incineration, melting, sterilization, or disinfection. Furthermore, when entrusting disposal to another party, request processing from a contractor with a license for special management of industrial waste processing work.



#### IMPORTANT

Always use new DRI-CHEM AUTO TIPS, Sample Tubes, blood collection tubes, and DRI-CHEM MIXING CUPS for each sample. Do not reuse old ones.



#### IMPORTANT

Use only specified products. Otherwise, errors or malfunctions may occur.



#### IMPORTANT

When the power is shut off during test processing, such as by a power outage, replenish tips and replace mixing cups. The analyzer may lose the information of the usage positions of the consumables and use used mixing cups (holes).

### 1.17 Light Source Lamp



#### CAUTION

The light source lamp gets very hot. Before replacing the lamp, turn the power off, wait at least 5 minutes, and then check that the lamp has cooled.

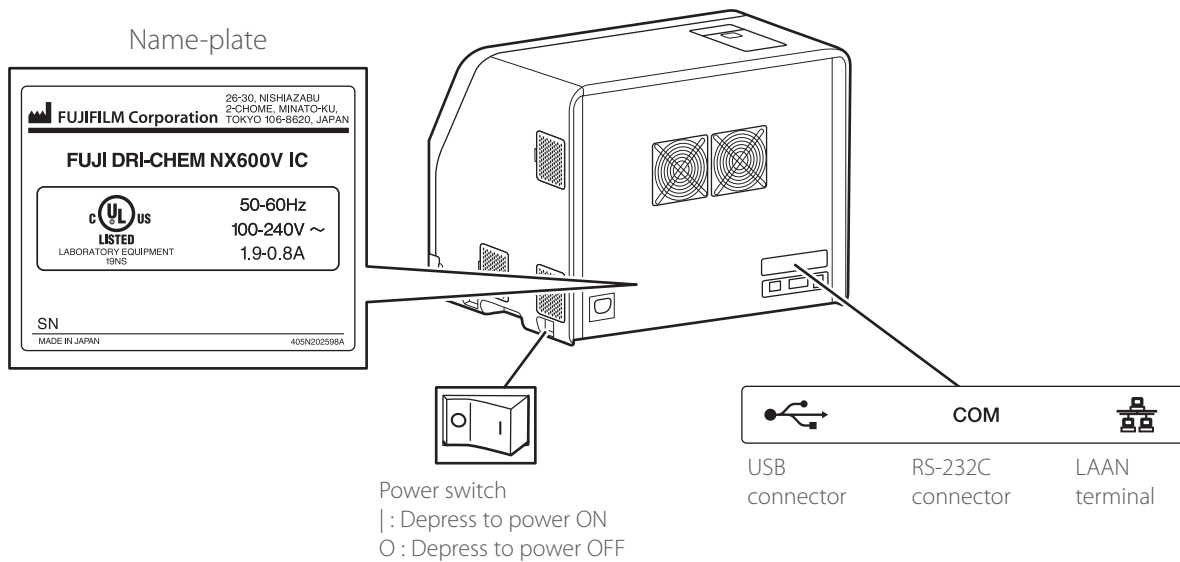
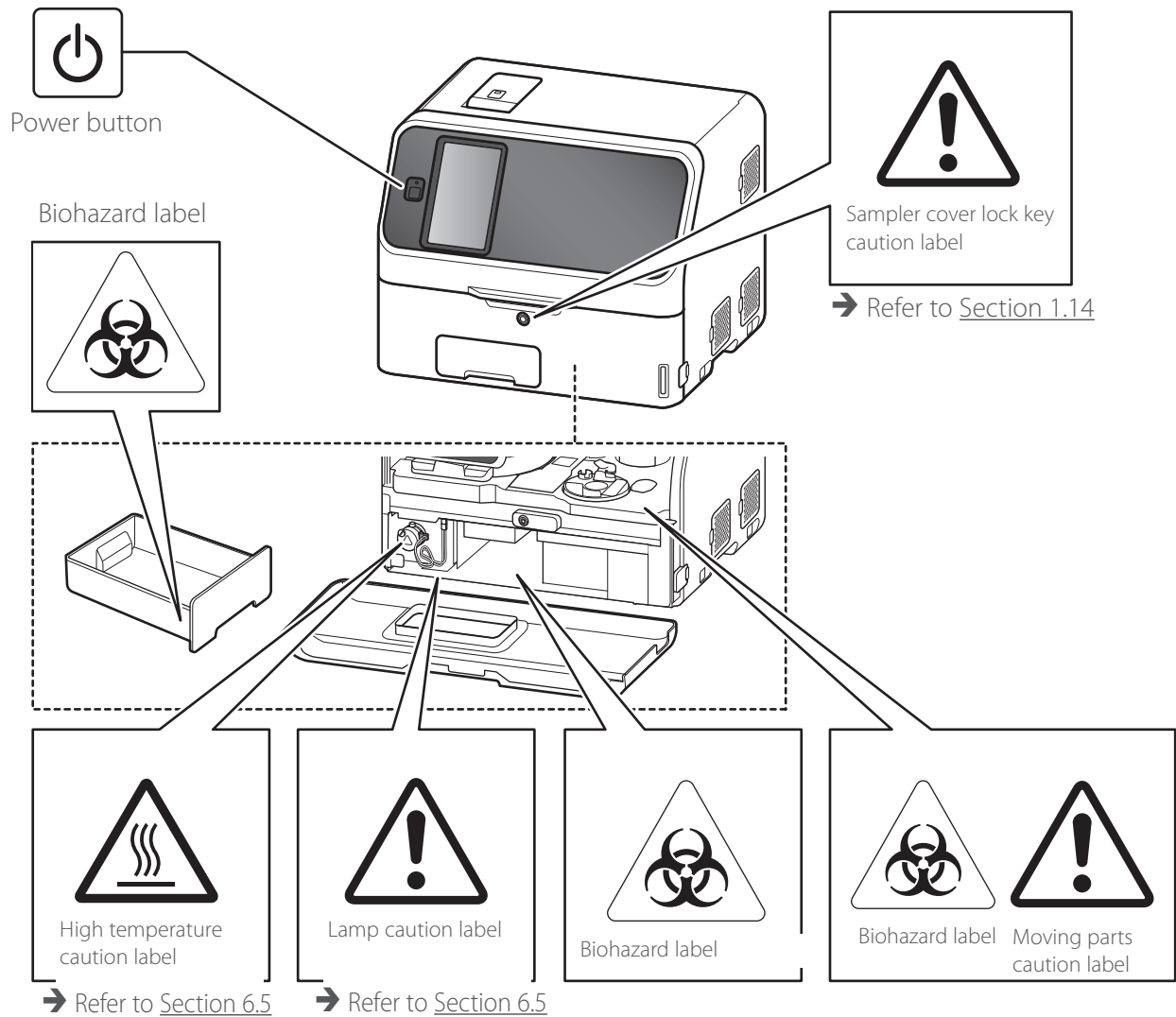
1. The light source lamp is a precision halogen lamp. Do not touch the glass surface of the lamp with your bare hands.
2. The lamp is a consumable with a lifetime. Always keep a spare lamp on hand in case the lamp burns out.

### 1.18 Recording Paper

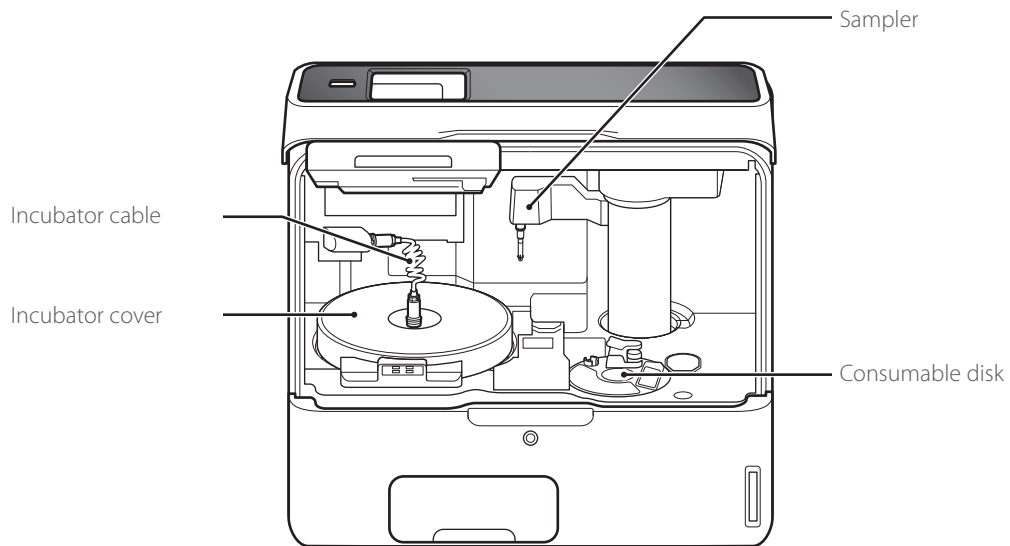
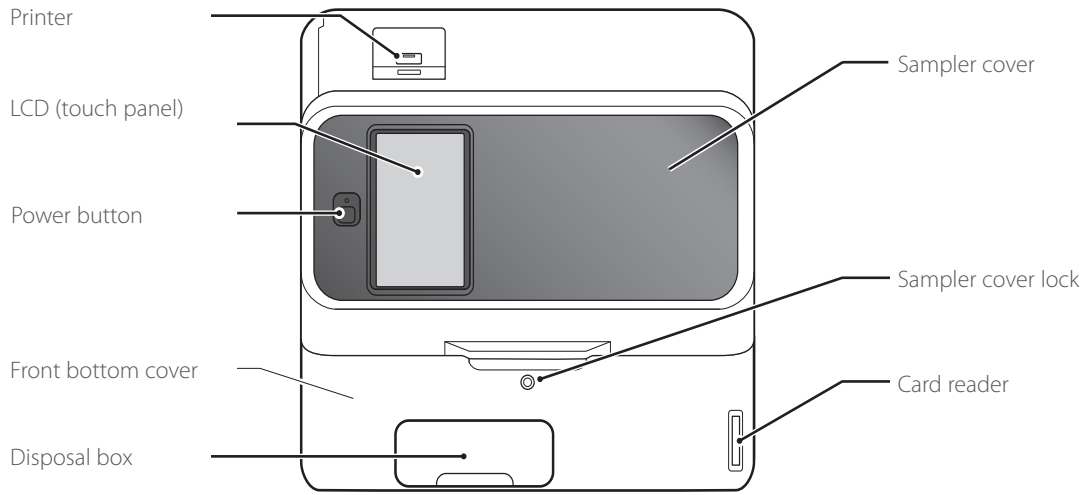
1. Use specified recording paper for the Element DCX.
2. If other recording paper is used, the printer head section may be damaged.

## 1.19 Labels

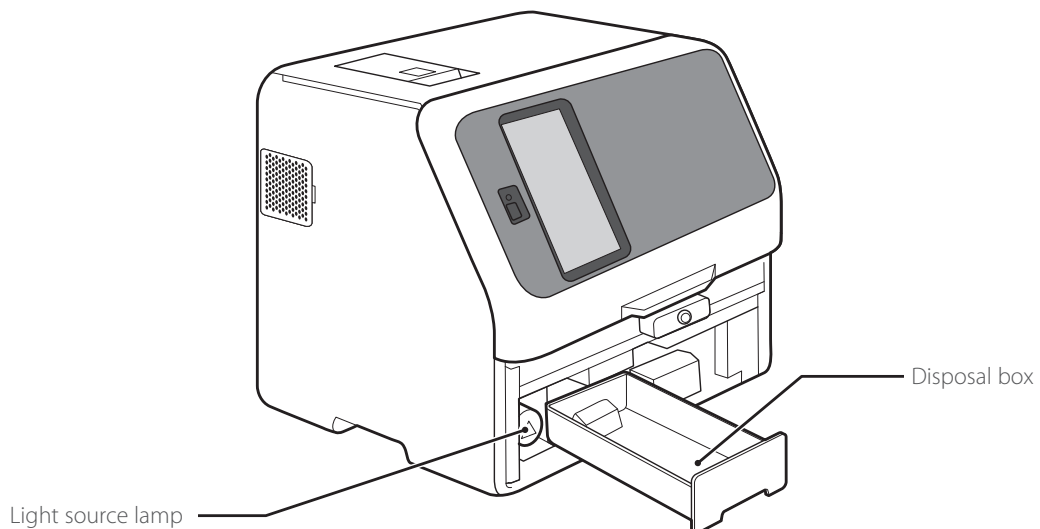
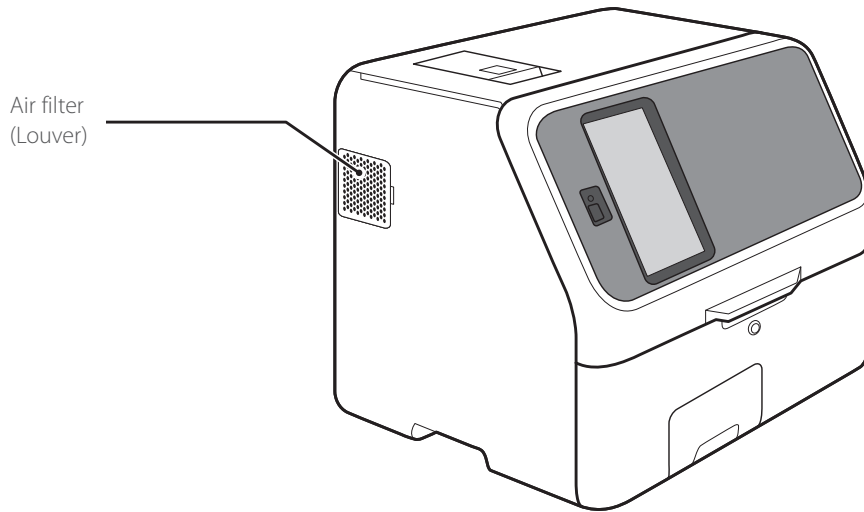
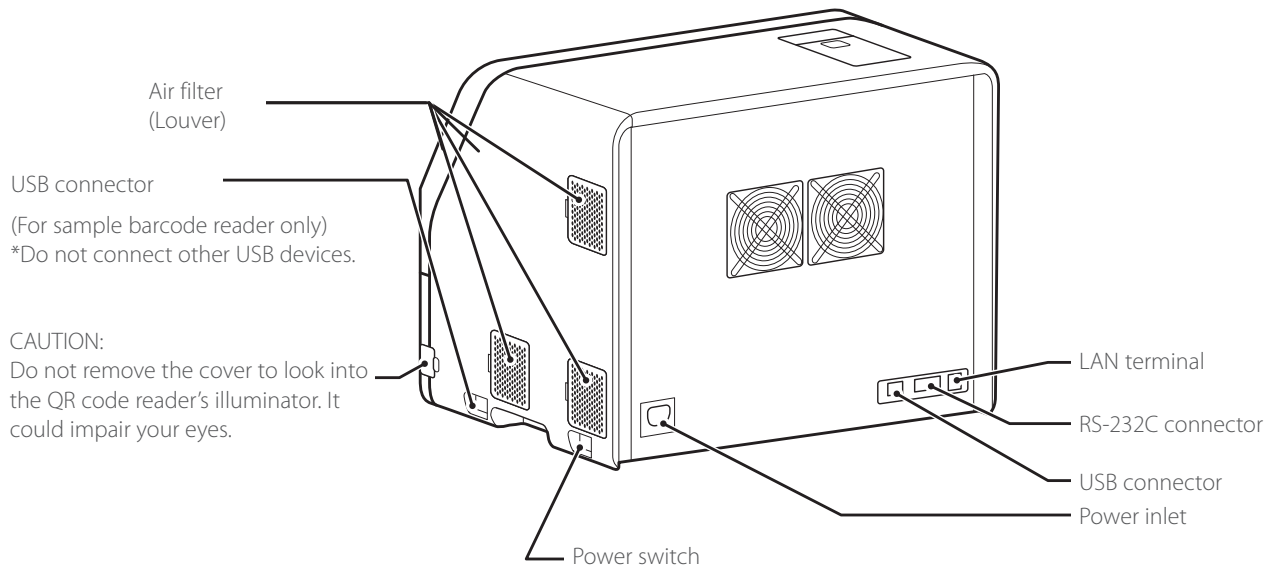
The following safety labels are affixed to the Element DCX.

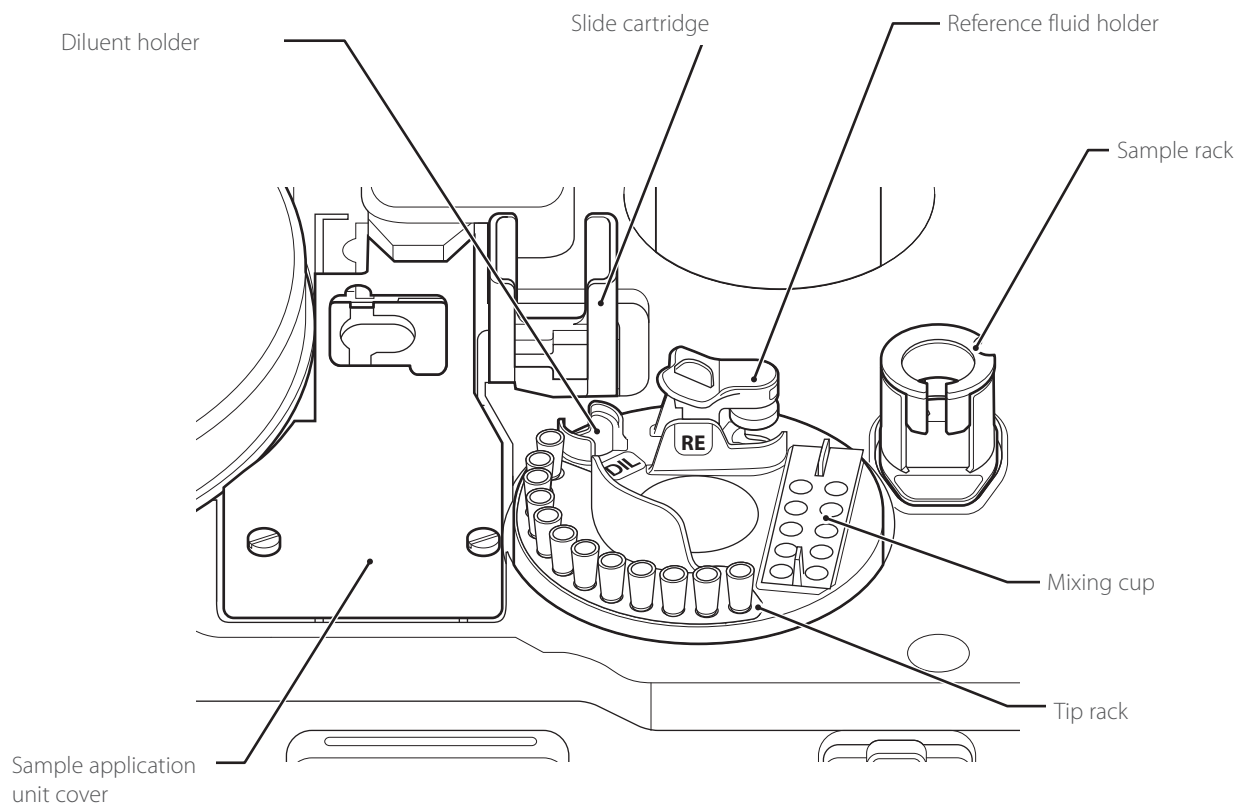


2.1 Part Names









**CAUTION**

The touch panel does not have multi-touch input function.

Do not touch plural points on the panel at the same time.

## 2.2 Touch Panel Screen Names and Functions

### 2.2.1 Measurement Preparation Screen (Top Screen)

If the power is switched on, the Measurement-preparation screen (top screen) is displayed after startup.

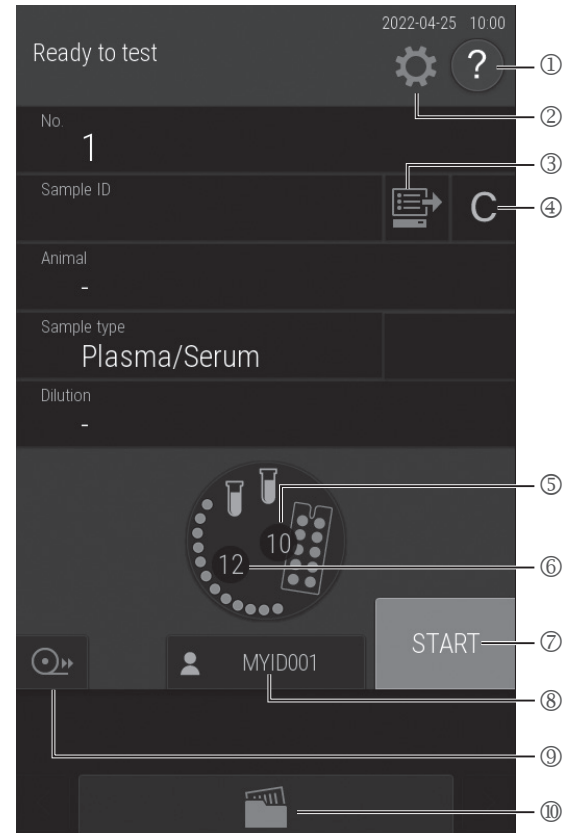


#### CAUTION


The touch panel does not have multi-touch input function.

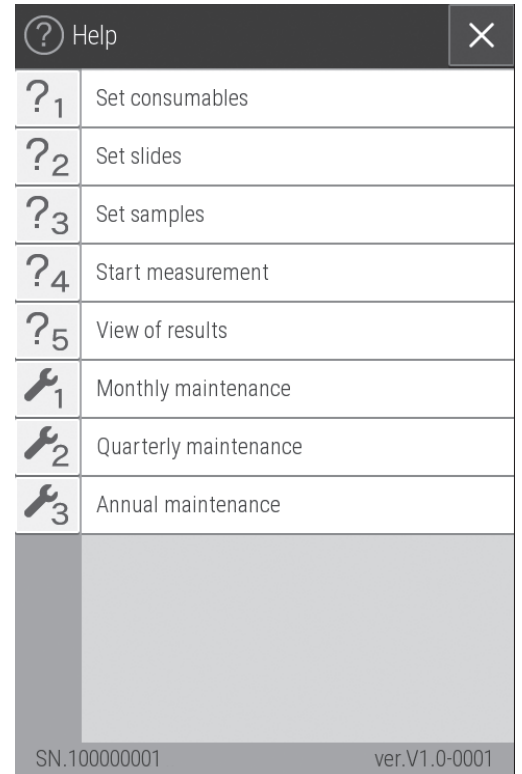
Do not touch plural points on the panel at the same time.



- ① **HELP** button  
Display the help screen. Refer to Section 2.2.2
- ② **Function** menu button  
Display the function menu screen. Refer to Section 1
- ③ **Work list** button  
Obtain order information from the host PC via a DMS connection. Refer to Section 4.5
- ④ **Clear** button  
Clear the entered information.
- ⑤ **Mixing cups**  
Displays the quantity of mixing cups. Tap to replace the mixing cups. Refer to Section 5.3
- ⑥ **Tips**  
Touch to replenish tips. Refer to Section 5.2
- ⑦ **START** button  
Start a measurement.
- ⑧ **Operator ID** button (displayed according to settings)  
If touched, you can enter the operator ID. Refer to Section 9.3.
- ⑨ **Feed** button  
Feed the recording paper for a fixed length.  
**STOP** button (displayed during sample application operation)  
If STOP is touched during sample application, tips are discarded, operation is stopped, and the device enters a paused state.
- ⑩ **Measurement results** button  
Display the measurement results. Refer to Section 3.4

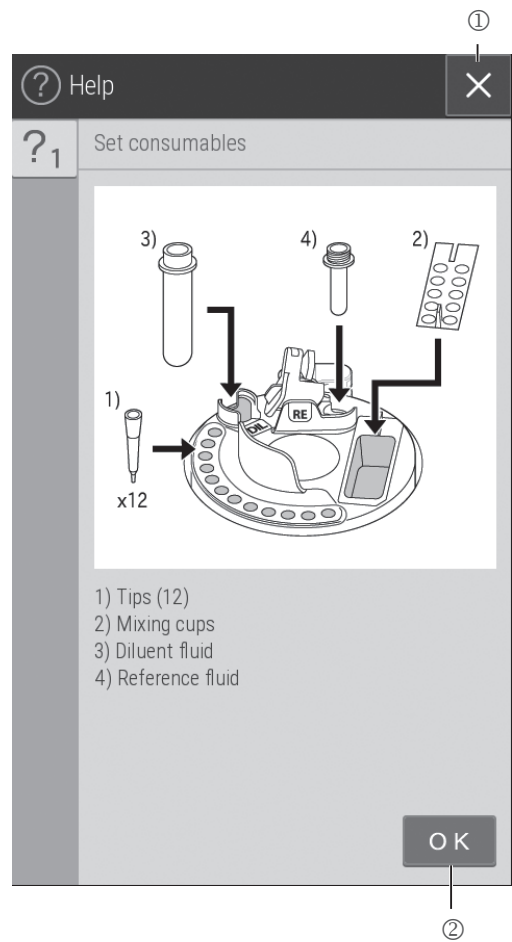


## 2.2.2 Help Screen

Touch  on the Measurement preparation screen to check the procedures about measurement, maintenance, consumable exchange, and other actions on the Element DCX.

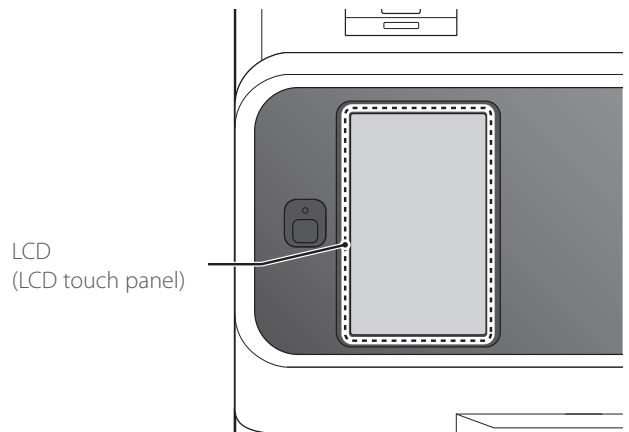




- ①  button  
The Measurement-preparation screen appears.
- ②  button  
Return to the previous screen.

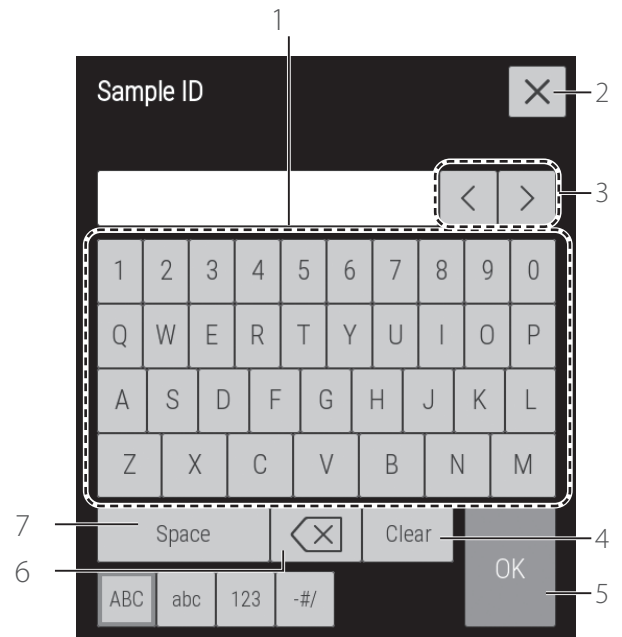


### 2.3 Names and Functions of Software Keyboard Screens

When data entry for operations and configurations is necessary, the software keyboard appears on the LCD automatically. Enter alphanumeric characters and symbols.



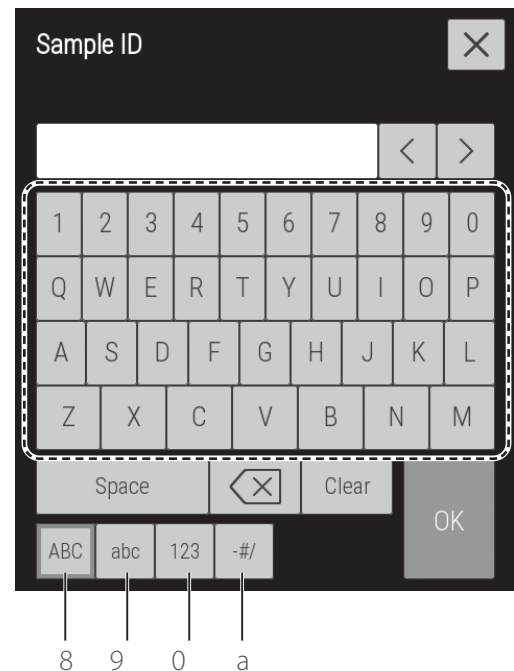
1. **Alphabetical characters, numbers, and symbols** buttons  
Enter alphabetical characters, numbers, and symbols.
2.  button  
Delete all entered characters, and then quit keyboard entry.
3. **Move cursor** buttons  
Move the position of the cursor left or right by one character.
4. **CLEAR** button  
Delete all entered characters.
5. **OK** button  
Confirm the entered characters.
6.  button  
Delete the character to the left of the cursor.
7. **Space bar**  
Enter a space of one single character width.



Change the entry screen by using the **ABC**, **abc**, **123**, or **-#/** buttons.

8. **ABC** button  
Display the entry screen for uppercase alphabetical characters and numbers.
9. **abc** button  
Display the entry screen for lowercase alphabetical characters and numbers.
0. **123** button  
Display the entry screen for numbers, comma (,), and minus symbol (-).
- a. **-#/** button  
Display the entry screen for symbols and numbers.

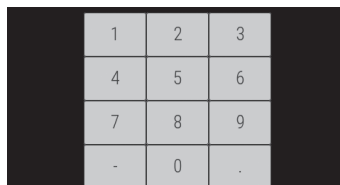
When the **ABC** button is selected



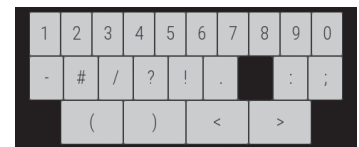
When the **abc** button is selected



When the **123** button is selected



When the **-#/** button is selected



## 2.4 Accessories

AC power cable	1
Recording paper	2 rolls
Slide cartridge	2
Slide weight	2
Light source lamp	1
O-ring	2
Tip rack	1
Sample rack assembly kit	1 set
Sampler leak check tool	2
DRI-CHEM AUTO TIPS	1 case
PLAIN TUBE 0.5 (0.5 mL type)	1 pack
DRI-CHEM MIXING CUPS	1 pack
Manual pipette cover	1
Key (for sampler cover)	2
Instruction manual	1
Installation method	1

### The requirements of the cable specifications for the Element DCX

Power voltage:	100 V–120 V
Requirements for the plug/connector:	AC125 V 10 A
Requirements for the cable:	SVT 3/18 AWG 140°F (60°C)
Power voltage:	200 V–240 V
Requirements for the plug/connector:	AC 250 V 10 A
Requirements for the cable:	GTCE-3 1.0 mm <sup>2</sup> 158°F (70°C)

**NOTE:** The AC power cable is required to be compliance with any applicable regulations in your country.

**NOTE:** Do not change AC power cable to inappropriate one.

**NOTE:** Specifications and capabilities are subject to change without notice.

## 2.5 Consumables and Optional Accessories

To purchase the consumables or optional accessories listed below, please contact the dealer from whom you purchased the Element DCX.

### 2.5.1 Consumables

Accessories	Package/unit
* DRI-CHEM AUTO TIPS	6 cases
Sample Tubes	
HEPARIN TUBE (1.5 mL)	500 × 1 box
HEPARIN TUBE (0.5 mL)	500 × 1 box
PLAIN TUBE (1.5 mL)	500 × 1 box
* PLAIN TUBE (0.5 mL)	500 × 1 box
* Recording paper	6 rolls x 1 box
* Light source lamp	1
* O-ring	4
* DRI-CHEM MIXING CUPS	50 x 1 box
Reference fluid cap packing	5 x 1 bag

**NOTE:** Parts names marked with "\*" are the same parts packed with the Element DCX.

Chemicals

DRI-CHEM CONTROL QN

DRI-CHEM REFERENCE FLUID RE

**NOTE:** Types of packages or containers for consumables are subject to change without notice.

### 2.5.2 Optional Accessories

Name	Package/Unit
* Sample rack assembly kit	1 set
* Slide cartridge	1
* Slide weight	1
Sample barcode reader	1



#### CAUTION

The sample barcode reader specified for the Element DCX can be used.

**Do not connect a barcode reader other than specified for the Element DCX. Otherwise, physical damage or danger of fire may result.**

**NOTE:** Parts names marked with "\*" are the same parts packed with the Element DCX.

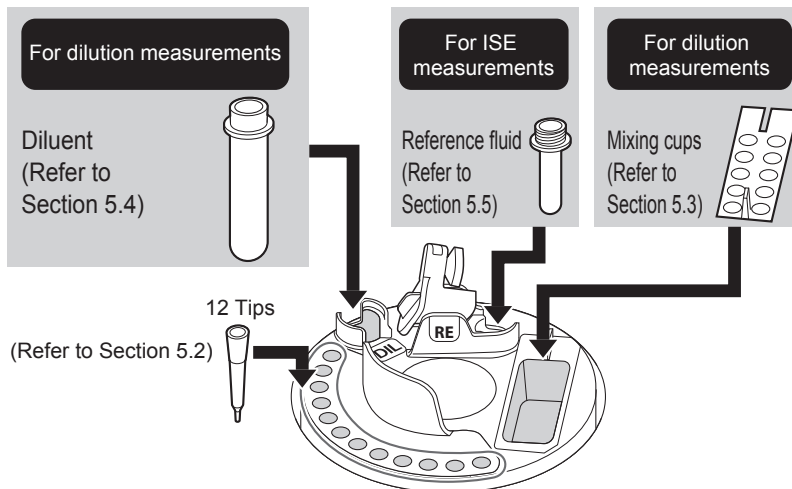
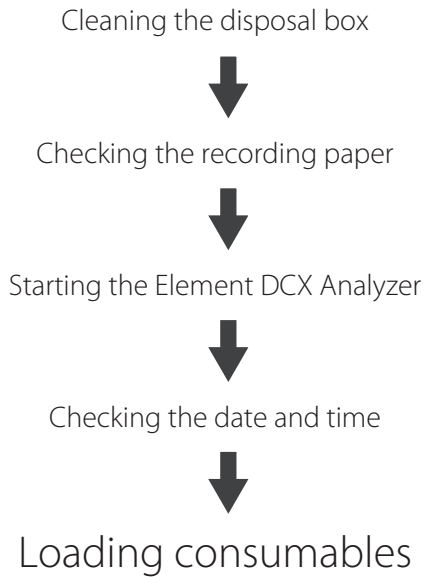
**NOTE:** Specifications and capabilities are subject to change without notice.



### 3.1 Operation Overview

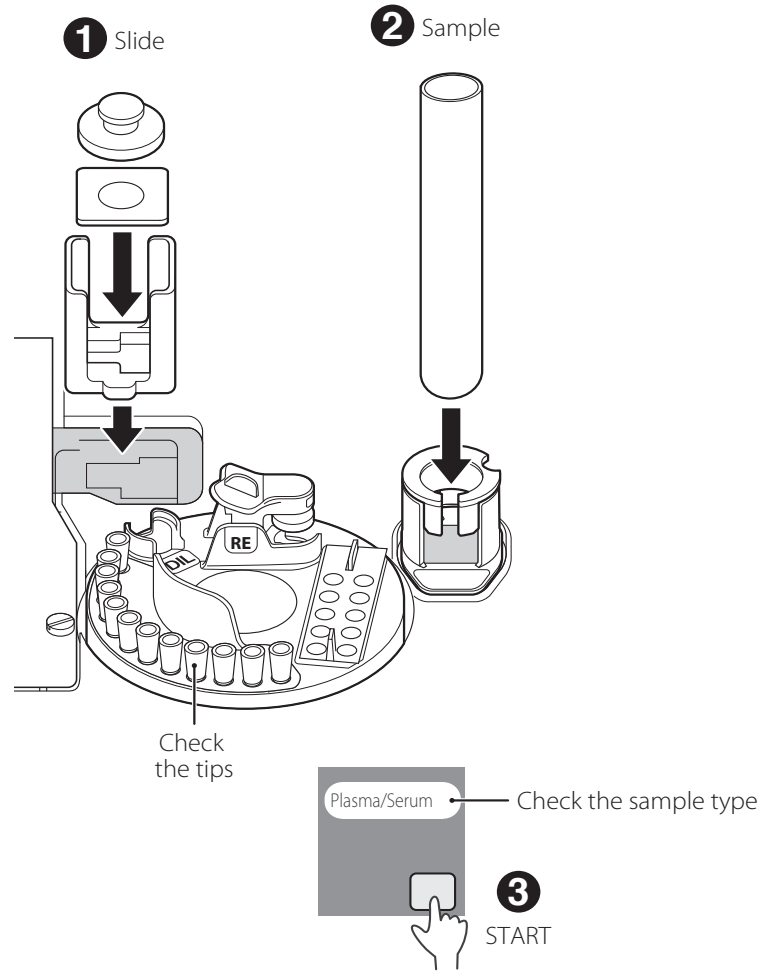
Load the consumables and other items to prepare for measurement (Step 1), and then perform the actual measurement (Step 2).

#### 3.1.1 Load Consumables



### 3.1.2 Measurement

**NOTE:** Refer to Section 3 for ISE and Dilution measurements



Slide set order → Refer to Section 4		
To test CM (Dil) and CM slide	To test CM and ISE slide	To test CM slides that require dilution



Checking the measurement results



Ending measurement

**NOTE:** CM: Colorimetric test that does not require dilution. CM (Dil): Colorimetric test that requires dilution.

## 3.2 Measurement Preparation

### 3.2.1 Cleaning the Disposal Box

1. Empty the disposal box.

#### IMPORTANT

If the disposal box is full, a slide transfer error or tip disposal error may occur, which may negatively affect the measurement values.

#### IMPORTANT

After emptying the disposal box, be sure to load the disposal box. If the analyzer is used without the box, the measurement results may be negatively affected.

#### WARNING

Do not touch used slides and tips with your bare hands, as this may cause infection. If you accidentally touch an item, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.

#### WARNING

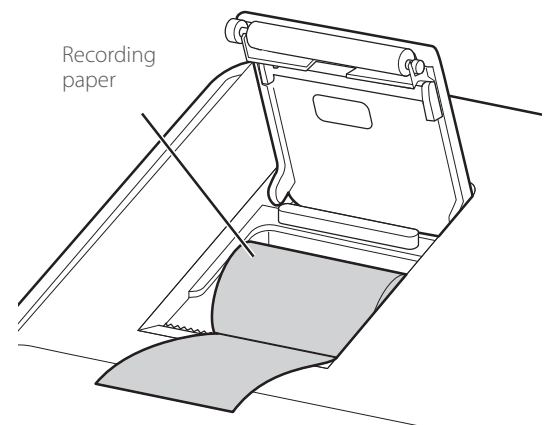
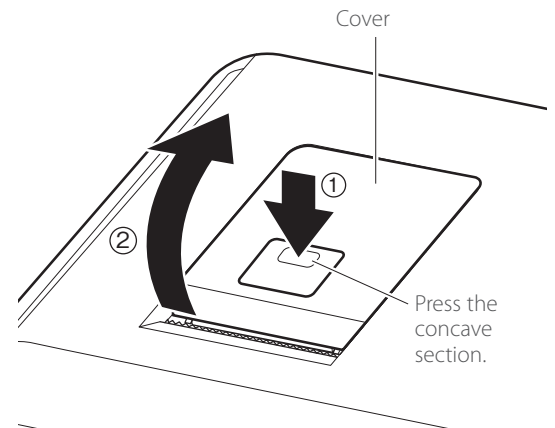
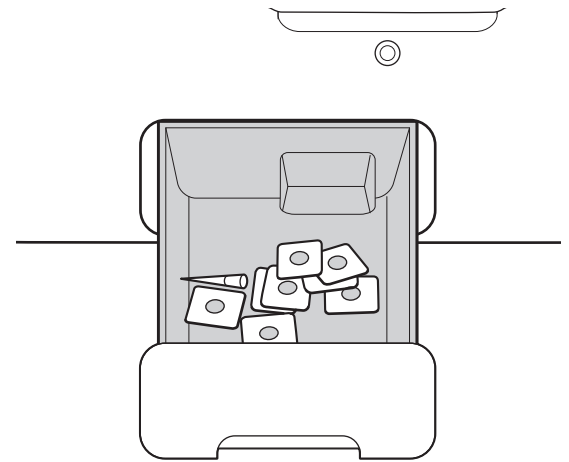
Used slides and tips are infectious industrial waste. Process this waste in compliance with any applicable regulations in your country, such as by incineration, melting, sterilization, or disinfection.

2. Check the recording paper

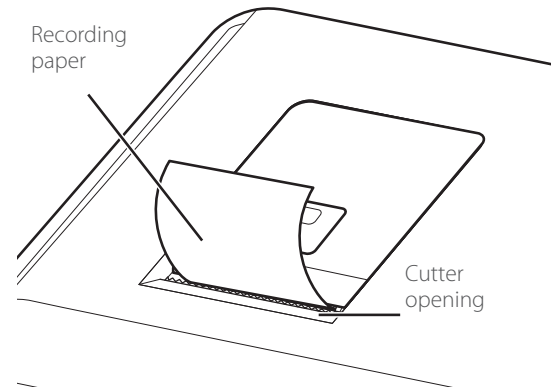
Press the area shown in the illustration to release the lock (1), and then lift up the cover (2).

Check the remaining recording paper (thermal paper). If the recording paper is short for the measurement, replace the old roll with a new one.

**NOTE:** Before closing the cover, pull out the edge of the recording paper.



**NOTE:** Close the cover securely until it clicks. Otherwise, the paper feed may fail and the test results will not be printed out.



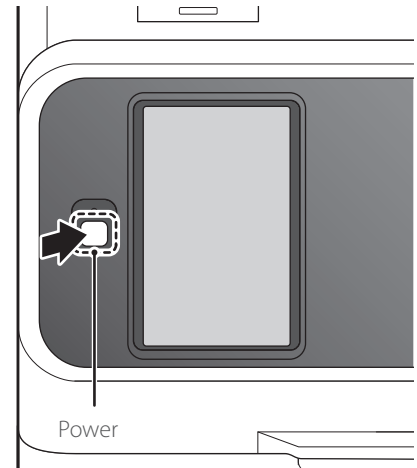
### 3. Starting the Element DCX Analyzer

Press the power button to start the Element DCX Analyzer.

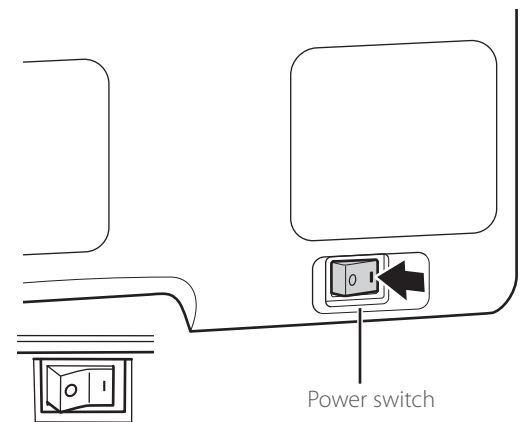
**NOTE:** If the equipment is connected to DMS, switch on the equipment before starting DMS. Failure to observe this precaution could interfere with data transfer.

#### IMPORTANT

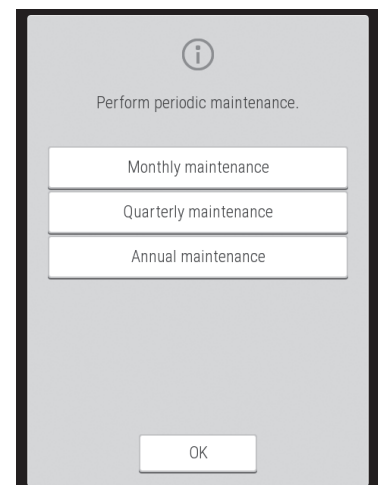
If the power has been shut off during measurement due to a power outage or other issue, replenish the tips and replace the mixing cups (refer to Section 5). The analyzer may lose the information of the usage positions of the consumables and use wells (holes) of used mixing cups.



**NOTE:** When the power switch is not in the ON position, push the switch to the "I" side.



**NOTE:** The image to the right is displayed during start-up once a month. Perform the periodic maintenance listed in Section 6.



4. Check the date and time
  - Check that the date and time displayed on the LCD are correct.
  - If they are incorrect, set the date and time using [Date & Time settings] in Normal mode.

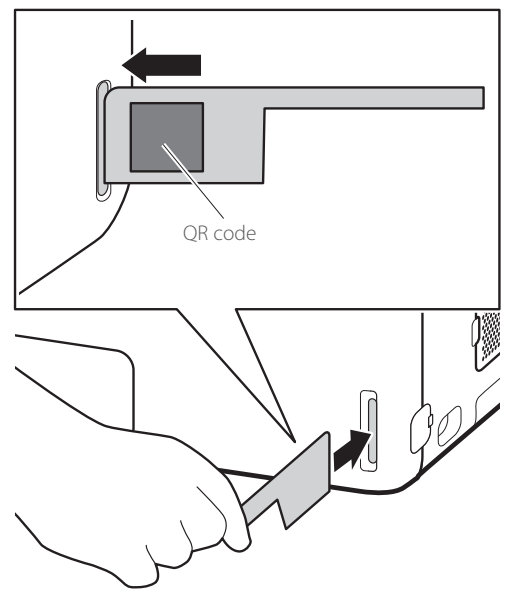
**!** **IMPORTANT**

If the date and time are not adjusted correctly, the analyzer may fail to determine the expiration of the slides and calibration, and measurement results might be incorrect.

5. Loading consumables
  - Load the consumables (tips, mixing cups, diluent, and reference fluid) in accordance with the type of measurement.

6. Reading a QC card
  - The Element DCX Analyzer can compensate for the differences of the slide production lots by reading the QC card in the box of slides.
  - When [Warming up] or [Ready to test] appears on the LCD, set the QR code on the left side, and then insert the QC card into the reader fully.

**NOTE:** If the QC card is dirty or folded, the read error may occur.



### 3.3 Basic Measurements

**NOTE:** By default, this analyzer switches off the light source lamp to save lamp life when the analyzer has not been used for the time configured under [Lamp management] in Normal mode. When the lamp is off, refer to Section 3 before operating the equipment.

**!** **WARNING**

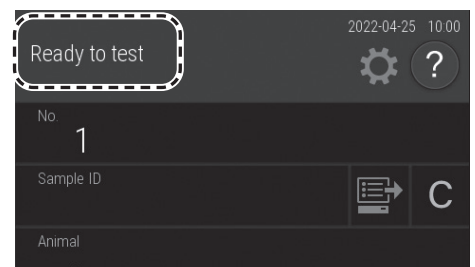
When handling samples (blood), always follow biohazard procedures (wear gloves, a lab coat, and safety goggles) in accordance with the sample handling rules of your facility. If you accidentally touch a sample, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.

#### Checking the LCD

When [Ready to test] appears on the LCD, make sure that the analyzer is not applying samples.

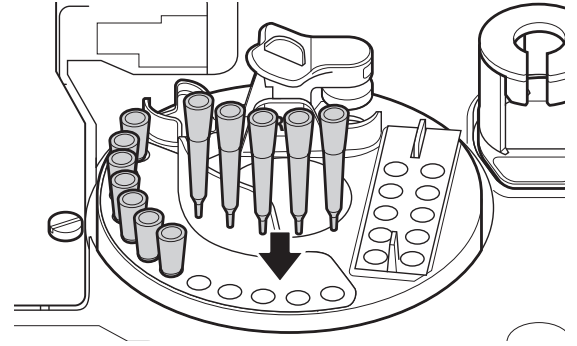
**NOTE** You can stop sample application by pressing STOP.

**NOTE** During sample application, a new sample for the next measurement cannot be loaded on the analyzer.



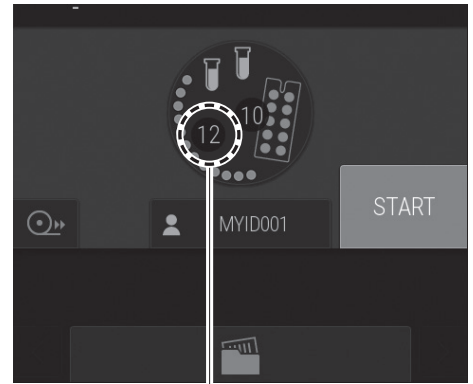
## Setting the Tips

Open the sampler cover, and then check the tip rack has been loaded with tips. When there are not enough tips, touch the tip display on the LCD to display the replacement screen, and then load the tips. For details of the loading method, refer to Section 5.



### ! IMPORTANT

If the power has been shut off during measurement due to a power outage or other issue, replenish the tips and replace the mixing cups (refer to Section 5.3). The analyzer may lose the information of the usage positions of the consumables and use wells (holes) of used mixing cups.



Tips

## Loading Samples and Slides

### ! WARNING

When handling samples (blood), always follow biohazard procedures (wear gloves, a lab coat, and safety goggles) in accordance with the sample handling rules of your facility. If you accidentally touch a sample, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.

1. Open the packaging of the slide to be used.

### ! IMPORTANT

Take out the required number of slides from the refrigerator, and allow them to reach room temperature for 5 minutes or more with the condition of the individual package before unwrapping and using them. Otherwise, the measurement results and the analyzer operation

### ! IMPORTANT

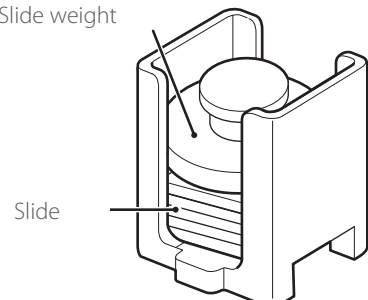
After the package has been unwrapped, finish measurement within 30 minutes.

2. Place slides to be measured in the slide cartridge with the test name facing up. Be sure to put the slide weight on top of the stacked slides.

**NOTE:** The item to be measured is determined from the slide information on the back of the slide.

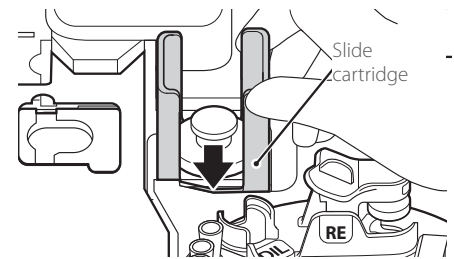
**NOTE:** ISE slides can also be loaded at the same time as the slide cartridge. Including ISE slides, a maximum of 20 slides can be loaded.

Slide weight



Slide

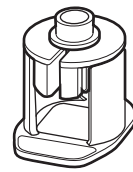
3. Load the slide cartridge while aligning its orientation.



4. Load the dedicated sample rack for the blood collection tube or sample tube to be used.

**NOTE:** To avoid a suction error or malfunction, use a sample tube that matches the label on the sample rack.

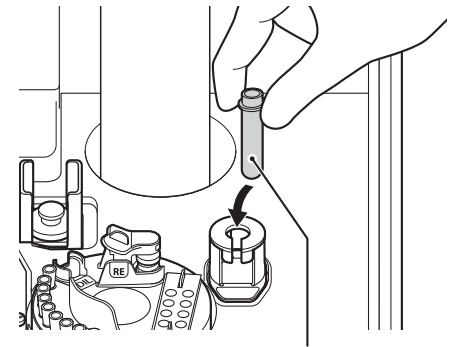
**NOTE:** Refer to Section 3 for sample tubes that can be used.



0.5ml

5. Remove sample tube cap that contains sample, and then load it on the dedicated sample rack.

**NOTE:** Make sure there are no bubbles in the sample tube. Use a centrifuge to remove bubbles. If bubbles are present, the sample may be detected incorrectly.



Blood collection tube or Sample Tube

### Registering the Information.

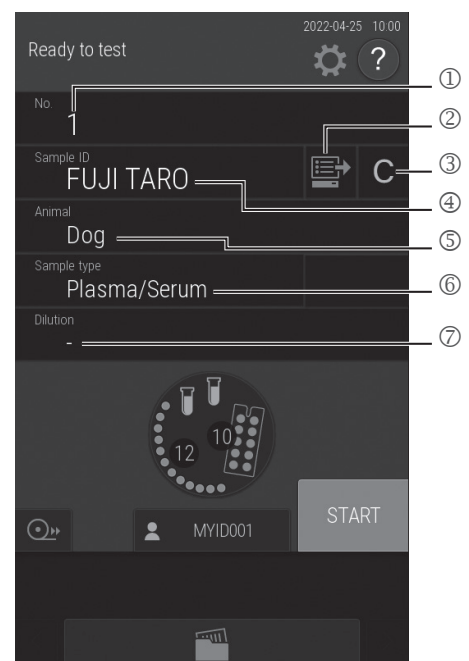
Enter or select the sample information (sample number, sample ID, reference standard, and sample type).

- ① Enter the sample number using the software keyboard.
- ② Obtain order information from the host PC via a DMS connection.
- ③ Clear the entered information.
- ④ Enter the sample ID using the software keyboard
- ⑤ Select a reference standard from the list.
- ⑥ Select a sample type from the list.
- ⑦ Select a dilution factor from the list.

**NOTE:** When the analyzer is connected to DMS, sample information can be acquired automatically from the work list.

### IMPORTANT

The sample type of the sample, slide, and the sample type setting of the Element DCX Analyzer must be same. Otherwise, an incorrect measurement result will be obtained.



**!** IMPORTANT

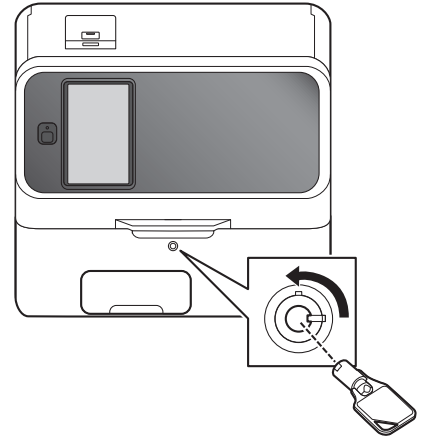
Be sure to enter the correct sample number and sample ID.

Starting Measurement

1. Close the sampler cover.

**!** WARNING

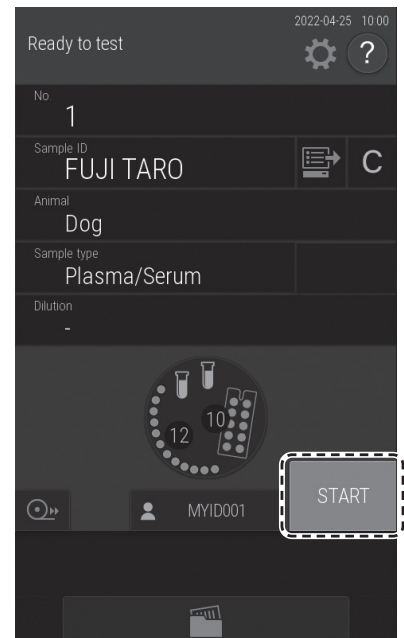
When the display reads [Ready to test], the sampler cover can be opened.



2. Touch START to begin measurement.

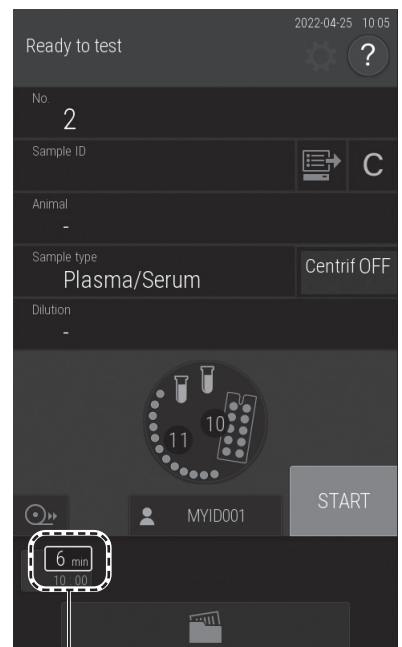
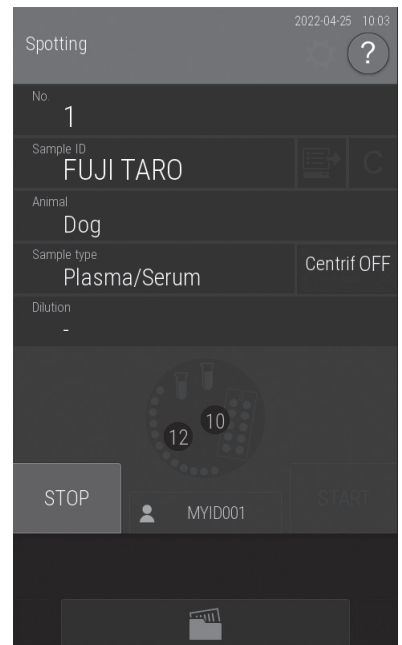
**!** IMPORTANT

Close the disposal box. If it is open, the measurement results will be affected.






When the spotting operation is completed, the screen on the right is displayed and the time until the measurement is completed is displayed.



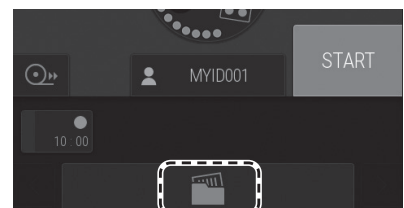
6 min — Time until the end of measurement  
10:00 — Measurement start time

#### 6. Checking the measurement results

After measurement, touch  to check the test results. The test results are printed out in the order that the slides were loaded in the cartridge.

To retest touch  (retest). Refer to Section 3.3

**NOTE:** For the details of the measurement result screen, refer to Section 3.



## 7. Ending measurement

To complete the measurement, open sample cover and then remove the measured sample.

**NOTE:** When a measurement is not being performed, empty the disposal box as appropriate. The disposal box can hold 100 slides and 50 AUTO TIPS. Always empty the disposal box before these numbers are exceeded.

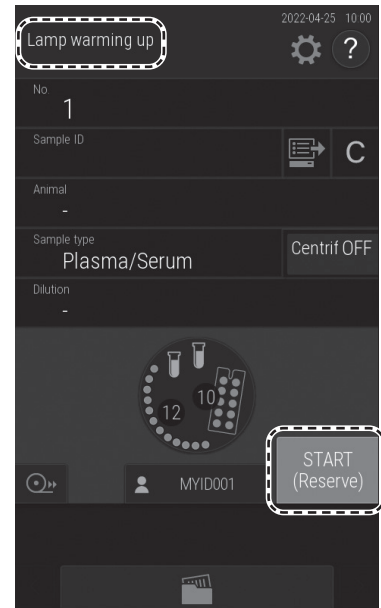


### 3.3.1 Lamp Off and Measurement-Start Scheduling

By default, when this analyzer has not been used for 20 minutes while [Ready to test] is displayed on the LCD, it switches off the light source lamp to save lamp life. After the lamp is switched on again, the start of measurement can be scheduled even when [Lamp warming up] is displayed on the LCD.

**NOTE:** The start of measurement cannot be scheduled in manual sample application mode.

The touch panel screen becomes darker when the lamp is off. If the screen is touched, the lamp switches on, and [Lamp warming up] is displayed on the LCD. In the case of the Measurement-preparation screen, the start of measurement is scheduled if the START (Reserve) button is touched.




If measurement is possible, it starts automatically.

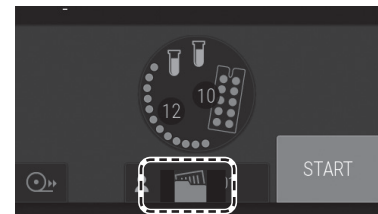
**NOTE:** To cancel a scheduled measurement-start, touch STOP.



### 3.4 Measurement Results Screen

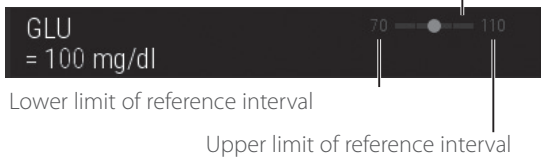
After measurement has ended, touch , and then check the measurement results.



**NOTE:** Results of the last 270 samples are backed up in data.





Result data display area

- ① Green: Within reference interval  
Red: Outside reference interval  
Or, when the measurement result is not displayed due to an error



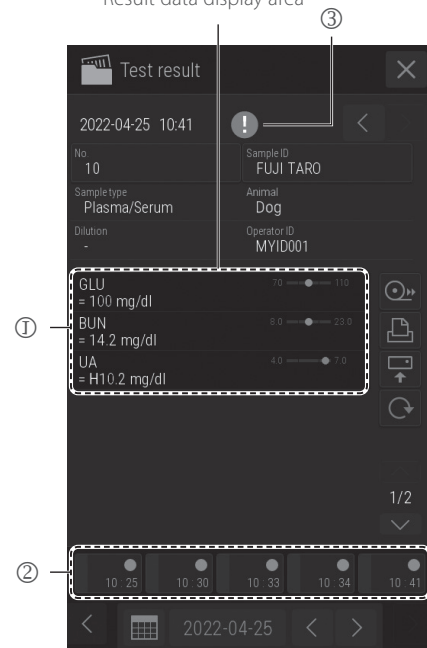
- ②  Green: All measurement results are within reference interval.
-  Red: The results include values outside the reference interval.  
Or, when an error has occurred.

- ③ Measurement results that include values outside the reference interval are indicated by , and the corresponding test name and value become red. If touched, the details screen appears.  
And,  will be indicated when an error has occurred.

Also, in case of the following,  will be indicated.


When a colorimetric/ISE test result is outside of the measurement range (determination range) or the qualitative range

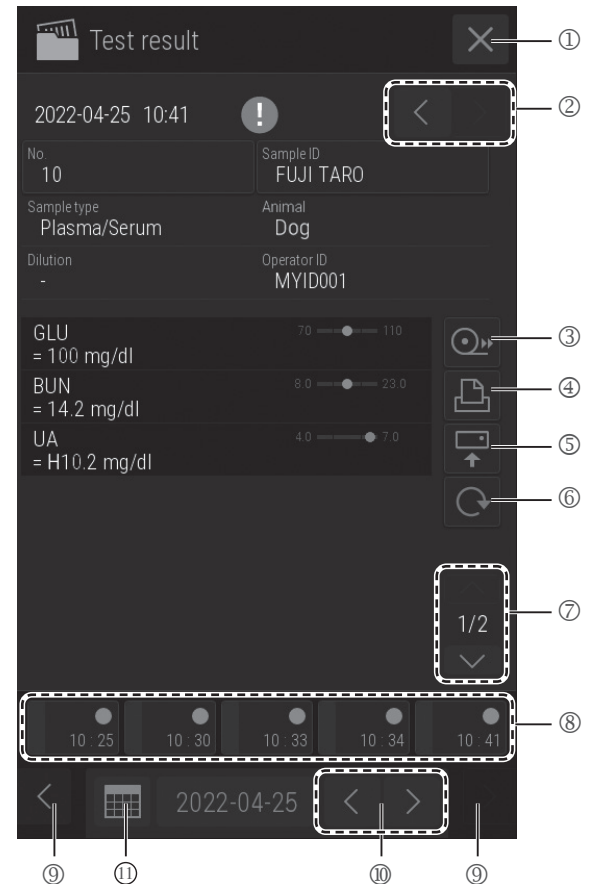
When a result of calculated parameter is displayed by [\*\*\*\*]



**NOTE:** If measurement items that display H, L, #, or other characters are touched, the details screen appears.

### Measurement results screen buttons

- ①  Close the Measurement results screen, and then return to the Measurement-preparation screen.
- ② **Change sample No.**  
Change the sample number for which measurement results are to be displayed.
- ③ **Feed**  
Feed the recording paper with a fixed amount.
- ④ **Print**  
Print all measurement results of the displayed sample.
- ⑤ **Send**  
Send the measurement results of the displayed sample to a PC (via DMS).
- ⑥ **Retest**  
Perform the measurement again under the same conditions for sample number, sample ID, reference standard, and sample type. Only the dilution factor can be changed.
- ⑦ **Result data scroll**  
Change the display of the measurement result data of the slide.
- ⑧ **Sample No.**  
Touch to display the measurement results of the selected sample number.
- ⑨ **Sample No. tab scroll**  
Change the display of the Sample No. tab.  
This button is available when five or more samples have been measured.
- ⑩ **Date scroll**  
Change the measurement date.
- ⑪ **Display calendar**  
Display the calendar. If a date within the calendar is touched, the measurement results of that day are displayed. Refer to the next page.



**NOTE:** When the past test results are displayed, the results are displayed just as they were obtained using the settings when they were measured, such as Unit Conversion, Correlation Coefficients, Reference Interval Range, Test Item name. The test results sent by using SEND also have the same format.

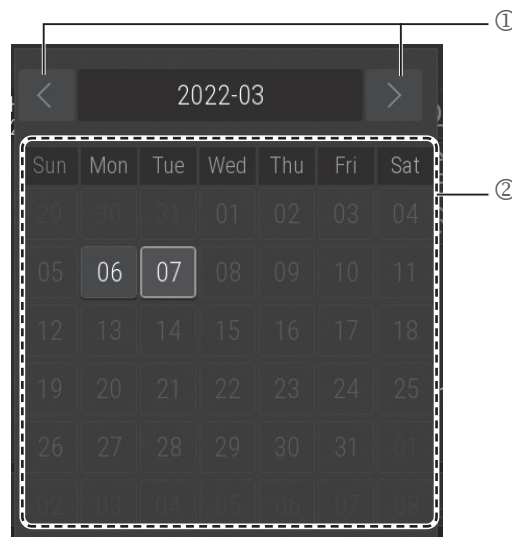
① Measurement month scroll

Change the display of the calendar month.

② Date

Display the measurement results screen of a date. The currently displayed date is displayed in blue.

**NOTE:** Dates with no measurements are displayed in gray and cannot be selected.



### 3.5 ISE Tests

**!** IMPORTANT

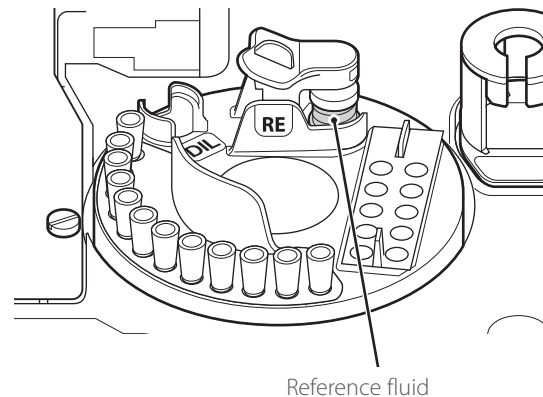
Analyzer cannot detect expiries of ISE slides if the installed software is version 1.0. Be sure manually that slides are still valid. Otherwise, with the software version 1.1 or later is installed, analyzer can automatically detect expiries of the ISE slides that will expire 2023 or later or whose lot numbers are 130000 to 139999.

**NOTE:** Two tips are necessary for each slide; one for sample, the other for reference fluid.

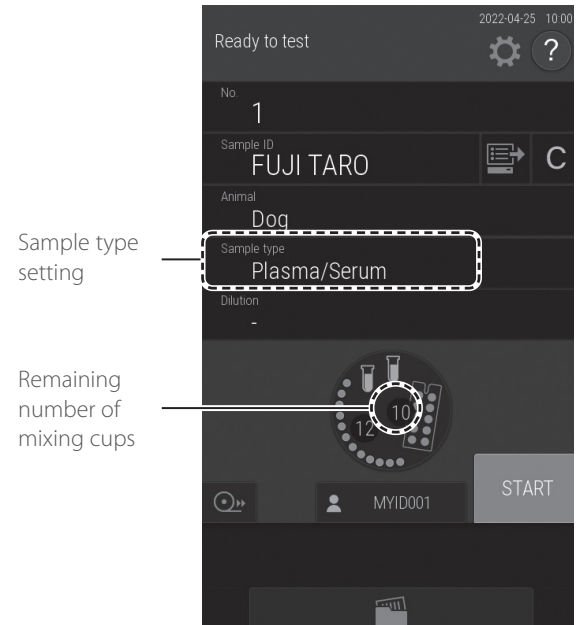
1. Load the reference fluid.

For the reference fluid container (plain tube 0.5 mL or 1.5 mL), use the container configured for [Tube setting for diluent and reference fluid] in Mode function for administrator.

2. Check quantity of tips.



3. Check the sample type setting.  
Register sample information as necessary.

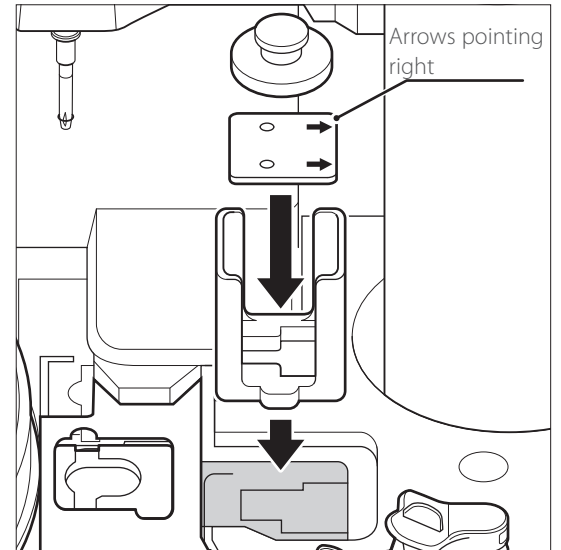


4. Load a sample and slides.

Place the ISE slide in the slide cartridge with the spotting hole above and the arrows pointing right. For details of the loading method, see Section 3.

**NOTE:** The direction of the arrow on the slide is opposite to the slide transport direction.

**NOTE:** When you measure an ISE slide and CM slide at the same time, we recommend loading the ISE slide last in the cartridge.

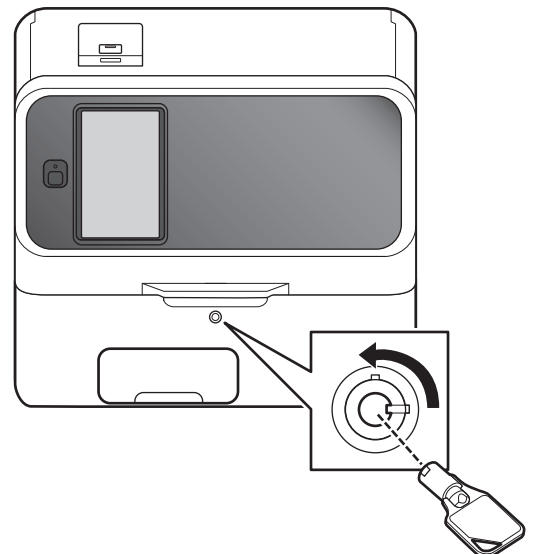


5. Close the sampler cover.

 **WARNING**

Ensure the sampler cover is locked during sample processing to prevent injuries and infection.

When the display reads [Ready to test], the sampler cover can be opened.



6. Touch START to start measurement.



### 3.6 Dilution Tests

There are 2 types of dilution measurement.

Dilute and measure automatically by using [Dilution setting] in Mode function for administrator to preset dilution factors for each test and sample type.

Dilute and measure all items to be measured by setting a dilution factor for each sample at the sample information registration screen.

The second method at the sample information registration screen is explained in this section.

#### IMPORTANT

**Bubbles may appear in the tip when diluting a plasma/serum sample. If bubbles have formed during dilution, perform the measurement again from the beginning.**

**NOTE:** The results of measurements that included dilution are calculated automatically, so the results can be reported without adjustment.

**NOTE:** The maximum number of dilution measurements from one mixing cup well (hole) is three. When the diluted sample in the well is insufficient, the analyzer automatically dilutes using the next well.

**NOTE:** Do not dilute whole blood samples.

Excluding ISE tests, the following section explains the relationships among the dilution factor configured for each sample at the sample information registration screen, the dilution factor for each test configured by [Dilution setting] in Mode function for administrator, and the dilution factor designated by the manufacturer. For ISE tests, the analyzer ignores the dilution factors configured for each sample or each test and using default dilution factor of the manufacturer.

- Dilution factor when configured for each sample at the sample information registration screen

$$\boxed{\text{Dilution factor configured for each sample}} \times \boxed{\text{Default dilution factor}}$$

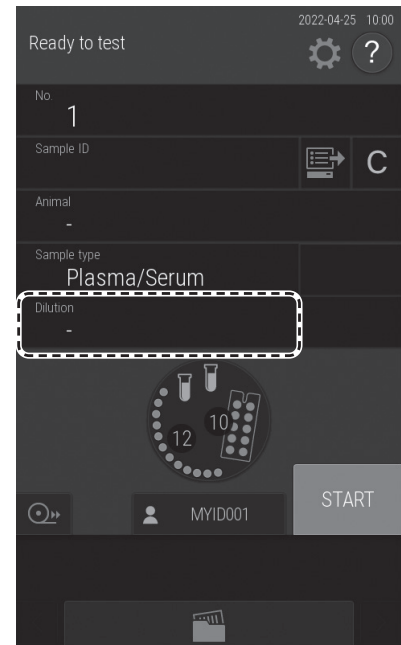
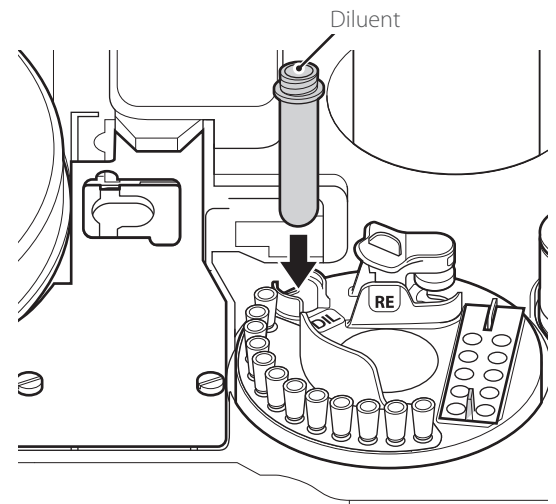
- Dilution factor when not configured for each sample at the sample information registration screen  
(Configured by [Dilution setting] in Mode function for administrator)

$$\boxed{\text{Dilution factor for each test}} \times \boxed{\text{Default dilution factor}}$$

**NOTE:** Only one type of diluent can be used to measure a sample.

### Example When Diluting Sample 2x

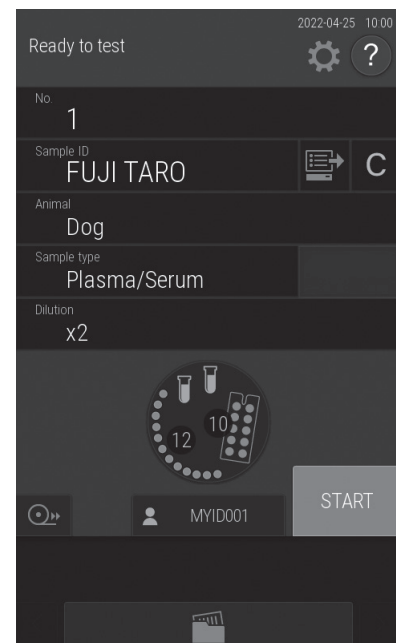
1. Check the quantity of the consumables (tips and mixing cups).  
If consumables are insufficient, supplement or replace them.
2. Load the diluent.
3. Load a sample and slides.
4. Touch DILUTION.



5. In the list, touch [x2].  
Dilution is performed according to [Dilution setting] in Mode function for administrator.

None: No dilution

**NOTE:** If necessary, enter or choose other sample information.



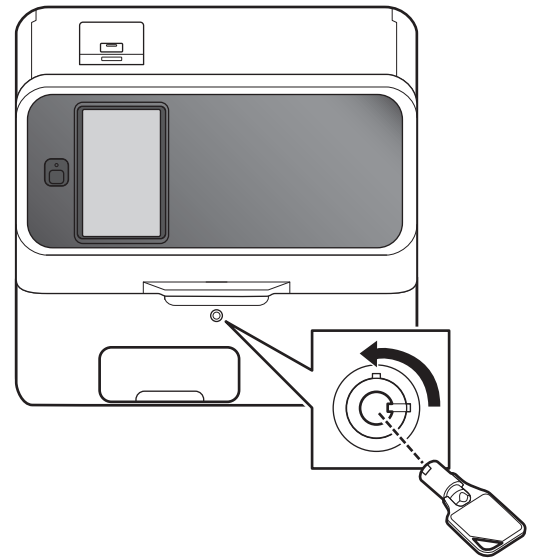


6. Close the sampler cover.



**WARNING**

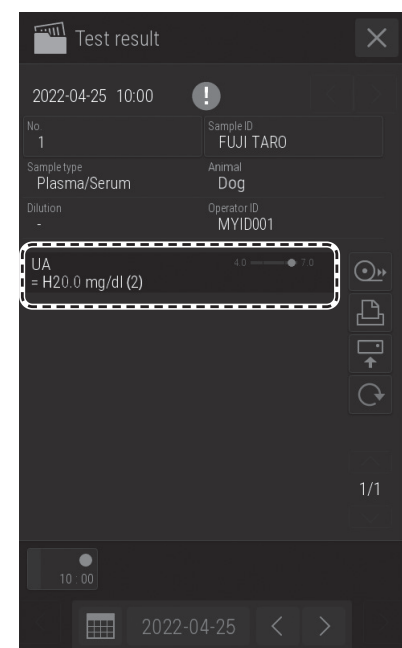
When the display reads [Ready to test], the sampler cover can be opened.



7. Touch START to begin measurement.

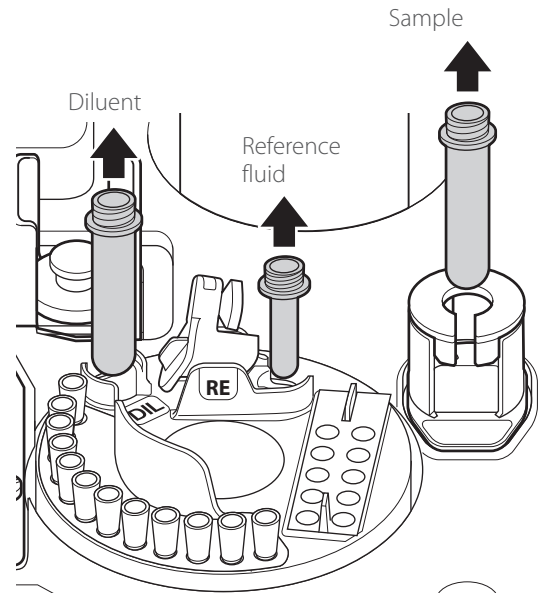


8. The dilution factor is added on the test result.



### 3.7 Shutting-down the Element DCX Analyzer

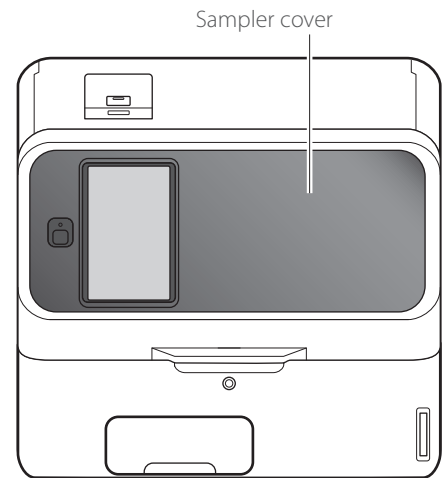
1. Remove the samples.
2. Remove the tubes of diluent and reference fluid from the analyzer.



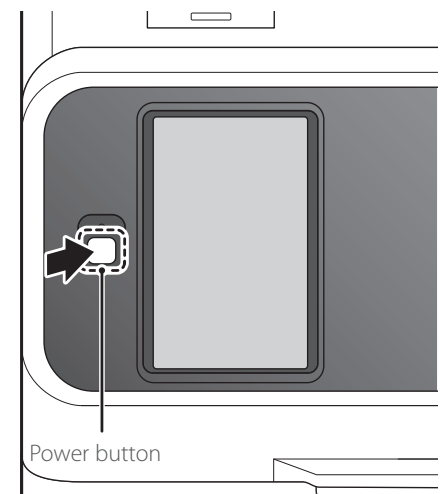
3. Close the sampler cover.
4. Make sure that measurement and mode operation are not in progress.

 **CAUTION**

Do not switch off the power during measurement or mode operation. Otherwise, the analyzer may malfunction. If the power was shut off during measurement, load tips and other consumables, and then run the measurement again from the start. Always replace mixing cups for dilution measurements.



5. Press the power button.



6. Touch OK.



**CAUTION**

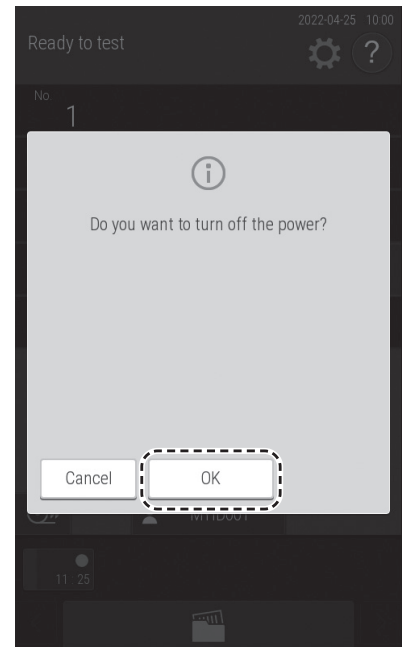
Shutdown will be automatically performed after the process completed. Make sure NOT to turn the power switch off.



**CAUTION**

Were you not able to operate on the screen, press the power button at front to turn off the power.

**NOTE:** When the analyzer will not be used for a long time, set the power switch to the "O" side.



7. Empty the disposal box.



**WARNING**

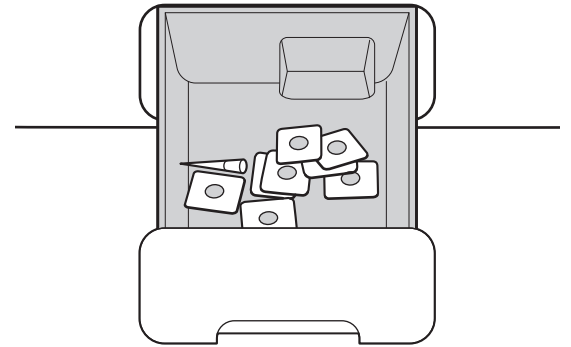
Do not touch used slides and tips with your bare hands, as this may cause infection. If you accidentally touch an item, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.



**WARNING**

Used slides and tips are infectious industrial waste. Process this waste in compliance with any applicable regulations in your country, such as by incineration, melting, sterilization, or disinfection.

**NOTE:** When disinfecting the disposal box, use ethyl alcohol for disinfection or a 0.5% sodium hypochlorite solution. When a sodium hypochlorite solution was used, wash the disposal box well and dry it before use.



### 3.8 Sample Tubes for the Element DCX Analyzer

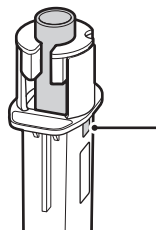
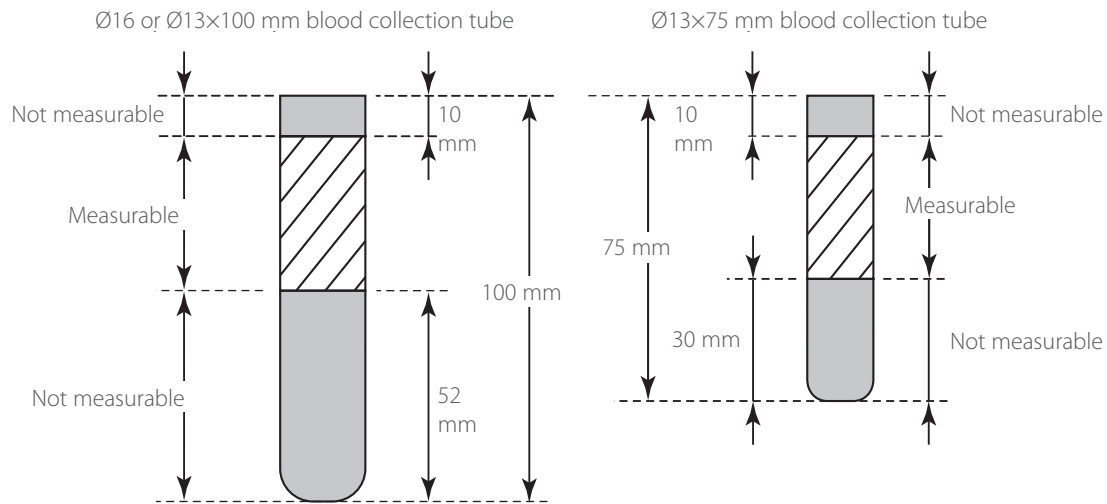
The following sample tubes can be used on the Element DCX Analyzer.

- Sample Tube 1.5 mL
- Sample Tube 0.5 mL

#### 3.8.1 Blood Collection Tubes

1. Size and effective liquid surface range of blood collection tubes that can be used

Outer diameter of Ø16 indicates Ø15.0 to 16.6 mm and Ø13 indicates Ø12.0 to 13.3 mm. The following illustrations show the design suction ranges. If the sample volume is low, use a Sample Tube (1.5 mL or 0.5 mL).



Sample volume confirmation holes (left and right)  
Load the blood collection tube with filled sample in the rack, so that you can see the actual sample through the holes.

2. Tube contents and inspection items that can be measured.



#### IMPORTANT

Refer to the “Instructions for Use” of the slides for usable blood collection tubes and observe the listed items.



#### IMPORTANT

For contents, inspection items, cap colors, and other details, contact the manufacturer of the blood collection tube to be used.

The tube contents of a blood collection tube determine which inspection items can be measured. The following section provides information about general blood collection tube contents and the inspection items that can be measured.

#### Heparin blood collection tubes

- Applicable to all items. For GLU and  $\text{NH}_3$ , measure the samples as soon as possible after blood collection.
- General color of cap: Green

#### Plain (no additive or anticoagulant) blood collection tubes

- Applicable for all tests other than  $\text{NH}_3$ .
- General color of cap: Red

### 3.8.2 Sample Tubes

Use these tubes in the place of blood collection tubes when the sample volume is low.



#### WARNING

When handling samples (blood), always follow biohazard procedures (wear gloves, a lab coat, and safety goggles) in accordance with the sample handling rules of your facility. If you accidentally touch a sample, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.

Make sure that the sample volume is sufficient by referring to the image to the right. The top surface of the sample fluid must be within the shaded section of the tubes in the illustration.

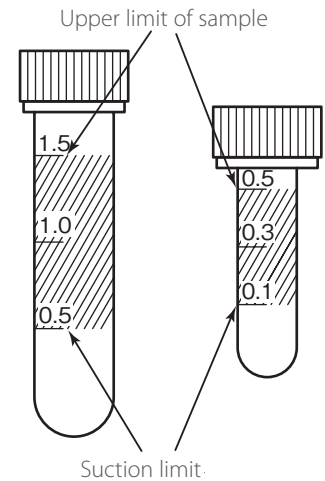
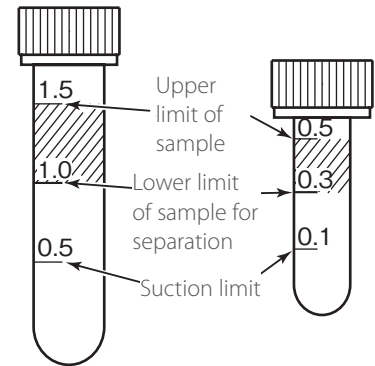
**NOTE:** If the sample in the tube is below the suction limit mark, the analyzer will indicate an insufficient sample volume error.

**NOTE:** To aspire only the supernatant fluid (plasma) of the centrifuged sample (and avoid aspiration of red blood cells), at least 1.0 mL (for a 1.5 mL tube) or 0.3 mL (for a 0.5 mL tube) of a whole blood sample for separation is necessary.

**NOTE:** Only 5 tests or fewer can be performed using a 0.3 mL whole blood sample with a Sample Tube (0.5 mL).

Effective liquid surface range of a Sample Tube

**NOTE:** At least 50  $\mu$ l of sample is needed.

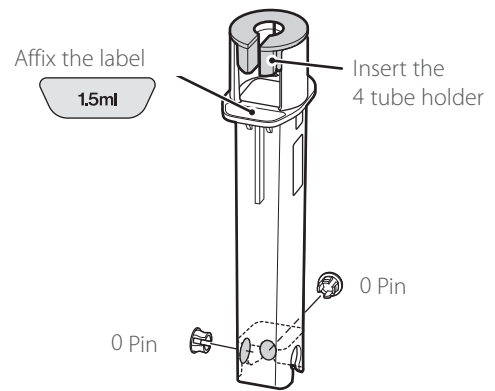


### 3.8.3 Assembling the Sample Rack

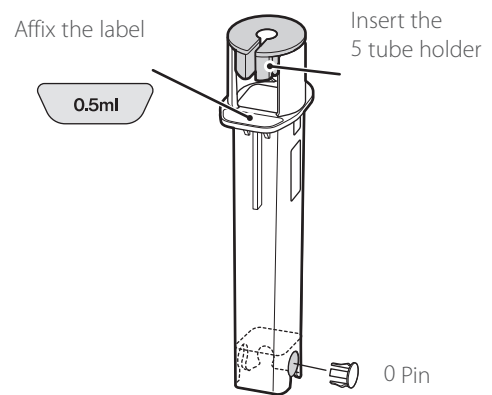
Assemble the sample rack according to the type of blood collection tube and tube to be used.

#### Sample rack variations

- Sample rack for 1.5 mL Sample Tube



- Sample rack for 0.5 mL Sample Tube



### 3.9 QC Card System

The QC card system compensates for variations between lots of DRI-CHEM slides and ensures uniform performance.

#### Calculation method

A variety of the reference fluids developed for DRI-CHEM slides are measured on each lot of slides.

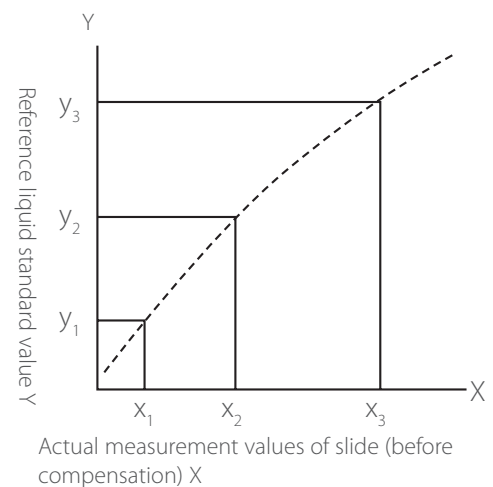
The relationship between the actual measurement values  $X$  ( $x_1, x_2, x_3$ ) and the standard values  $Y$  ( $y_1, y_2, y_3$ ) is expressed by the formula  $Y=c+dX+eX^2$ . The lot compensation coefficients ( $c$ ,  $d$ , and  $e$ ) derived from the formula are used to compensate for variations in  $X$  of each lot.

1. Inputting lot compensation coefficients using a QC card

The lot compensation coefficients are recorded on QC cards, and one QC card is packed with each box of slides. When data is input from a new card, the previously stored lot compensation coefficients are updated. Always read the new QC card when you switch to a new box of slides, because each QC card also contains slide data essential for measurement, in addition to the lot compensation coefficients.

**NOTE:** The "e" values recorded on the QC cards are expressed as  $e \times 10^3$ .

**NOTE:** The analyzer records the QC card information of up to 5 lots for each test. Reading QC cards of more than 5 lots results in deletion of QC information starting from the oldest.



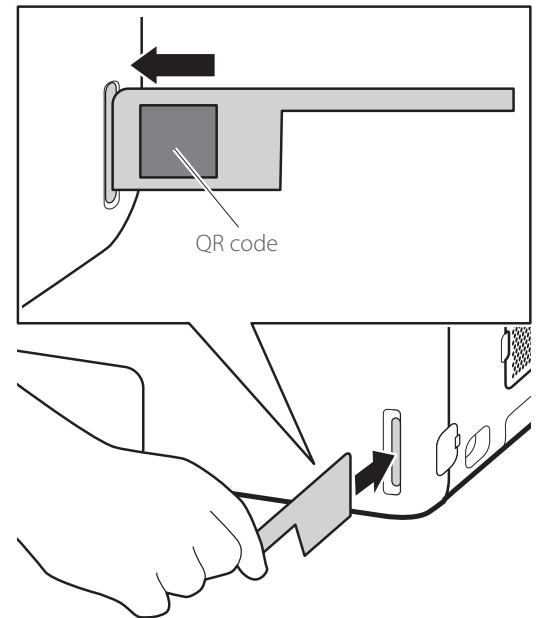
## 2. Using QC cards

A QC card must be read when a new test slide will be used or when changing to a new lot of slides.

Read the QC card while [Ready to test] or [Warming up] is displayed on the LCD.

Set the QR code on the left side, and then insert the QC card into the card reader fully.

**NOTE:** If the QC card is dirty or folded, the read error may occur.



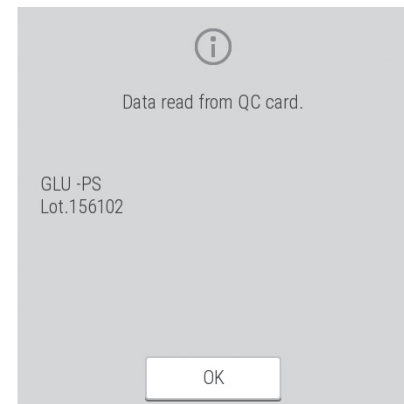
The slide test and production number (lot) are displayed on the LCD and output to the printer as well.

**NOTE:** Do not insert another QC card while the slide test and lot number are displayed.

**NOTE:** When the analyzer beeps and the test is not displayed, insert the QC card into the card reader again.

## 3. Using DI cards

When you receive DI cards due to a change of the slide's manufacturing process, read the DI cards according to the instructions. The reading method is the same as for QC cards.

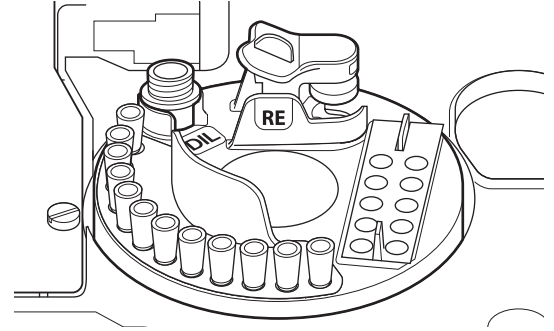


## 4.1 Measurement Preparation



1. Check quantity of tips.
2. Load diluent to perform measurements require dilution. Also, check the quantity of mixing cups.
3. Load slides.

**NOTE:** Tests using separation will leave separated plasma on the slide, so always use a plasma slide. Slide for whole blood cannot be used.

**NOTE:** Slide cartridges must be set in the correct slide order for each sample when testing dilution or testing electrolyte.



## 4.2 Retesting

You can test again using the previous sample number, sample ID, sample type setting, and reference interval setting by touching  (RETEST) at the Measurement results screen. Furthermore, when a measurement cannot be performed due to an error, you can skip the re-entry and re-configuration of the setting information by touching .

### IMPORTANT

The  (retest) button is designed only to automatically enter the sample number and sample ID of the previously measured sample. Do not use this button to retest samples from before the previous sample.

### 4.2.1 How to Retest

1. When [Ready to test] appears on the LCD, make sure that the analyzer is not applying samples, and then load the consumables and sample.

**NOTE:** Make sure that the sample volume is sufficient.

2. Touch the  (retest) button on the Measurement results screen.

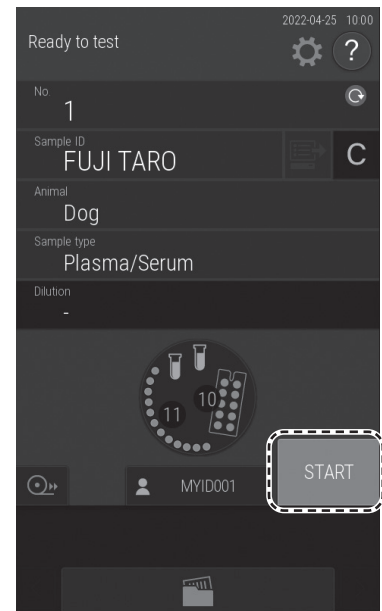




**NOTE:** The sample number or sample ID that was measured just before is displayed.

**NOTE:** In case of a sample scheduled for retesting,  is displayed.

**NOTE:** Touch the [Dilution] button to set the dilution factor.

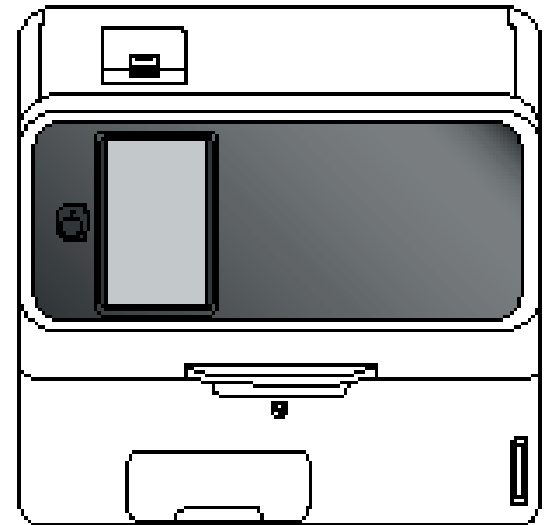


3. Close the sample cover.

 **WARNING**

When the display reads [Ready to test], the sampler cover can be opened.

4. Touch START to begin retesting.



### 4.3 Slide Loading Order When Measuring Different Items Simultaneously

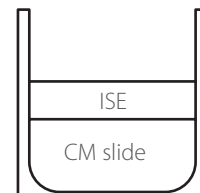
**NOTE:** Any order of slide stacking can be measured. However, please follow the recommended slide stacking rules below. Otherwise, the analyzer may consume excessive amounts of disposal tips and cups.

1. Measuring CM and ISE slides


We recommend loading an ISE slide last.

If an ISE slide is measured first, it might take extra time for measurement.


If a CM slide is loaded after an ISE slide, an extra tip will be used.



## 4.4 Automatic Acquisition of Sample Information (Work Lists)

If the analyzer is connected to DMS, you can receive patient IDs and their sample information by touching the  button at the Measurement-preparation screen before measurement.

**NOTE:** DMS is sold separately.



1. Touch the  button. The analyzer receives a work list (a list of patients for the samples to be measured) from DMS.

The Work list index screen appears.

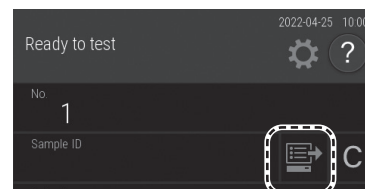
**NOTE:** If there are no measurement requests, the buzzer sounds, and the message [There is no request information] is displayed.

**NOTE:** The display of the list is configured by [Work list selection setting] in Mode function for administrator.

**NOTE:** On DMS, "Sample No." is "Sample ID" and "Sample ID" is "Patient ID".

**NOTE:** When there are multiple pages in a list, you can scroll the pages using the   buttons.


**NOTE:** If CANCEL WORK LIST is touched, the analyzer returns to the Measurement preparation screen.

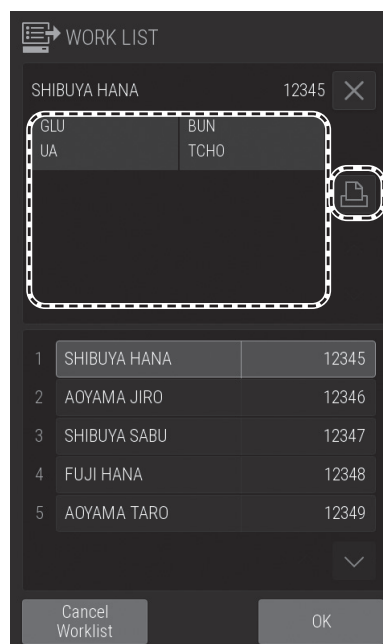


2. Touch the sample information you want to register.

The work list measurement items of the registered sample information are displayed.

**NOTE:** If  is touched, registration is cleared.

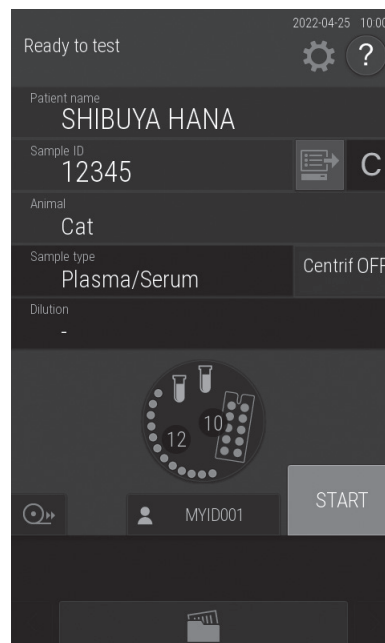
**NOTE:** The work list measurement items can be printed by touching the  button.



3. Touch OK to finish registration.

The Measurement preparation screen (top screen) returns.

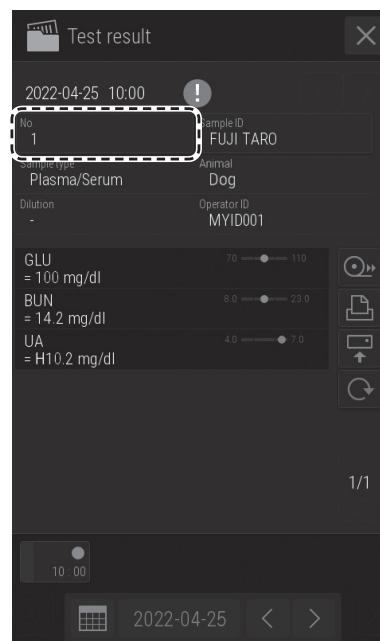
**NOTE:** The work list button lights.



## 4.5 Editing Sample Numbers and Sample IDs

You can edit the sample number and sample ID of measurement results. You can also send edited data to a host computer.

1. To edit the sample number, touch [No.] button at the Measurement results screen.

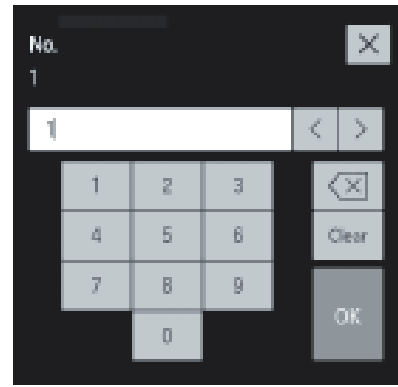


2. Enter the administrator password, and then touch the [OK] button.  
The Sample number entry screen appears.
3. Edit the sample number, and then touch [OK].  
The analyzer returns to the Measurement results screen.

**NOTE:** You can also edit the sample ID using the same procedure.

**!** **IMPORTANT**

Be sure not to make any entry errors.



## 4.6 Using the Sample Barcode Reader (Sold Separately)

You can easily enter the sample ID and operator ID by using the optional sample barcode reader.

**!** **IMPORTANT**

**IF the sample barcode reader malfunctions or the print quality of the barcode label is poor, incorrect barcode data may be read. Make sure that the barcode data (sample ID) printed in the measurement results are correct.**

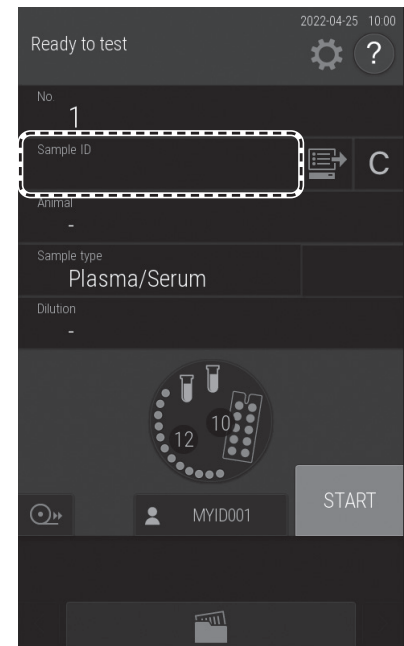
**NOTE:** Carefully read the instructions included with the sample barcode reader before using it. A maximum of 13 alphanumeric characters can be input for a sample ID. Always use the sample barcode reader under lighting at 3,000 lux or lower and avoid direct sunlight.

**NOTE:** Always connect the cable of the sample barcode reader before switching on the Element DCX Analyzer.

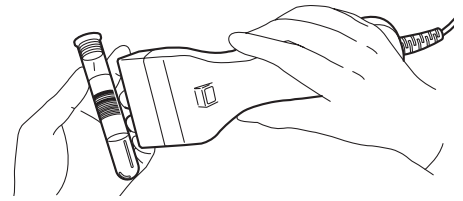
### When inputting the sample ID

1. Touch SAMPLE ID field. The software keyboard appears.

**NOTE:** When the setting "Use operator ID" is OFF, this operation is not required. The barcode reading is possible on the top screen.



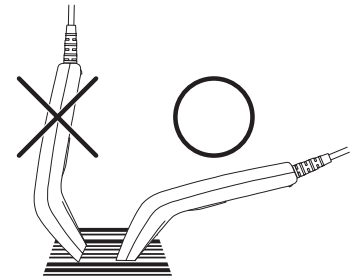
2. Read the barcode of the sample using the barcode reader.  
After reading is complete, the analyzer makes a beep sound. The sample ID is displayed on the LCD and is registered.



**NOTE:** Position the sample barcode reader properly facing to the barcode label. Otherwise, an incorrect reading may occur.

**NOTE:** Make sure the displayed ID is correct.

**NOTE:** When reading a barcode again, touch the SAMPLE ID field, and then re-read the barcode.



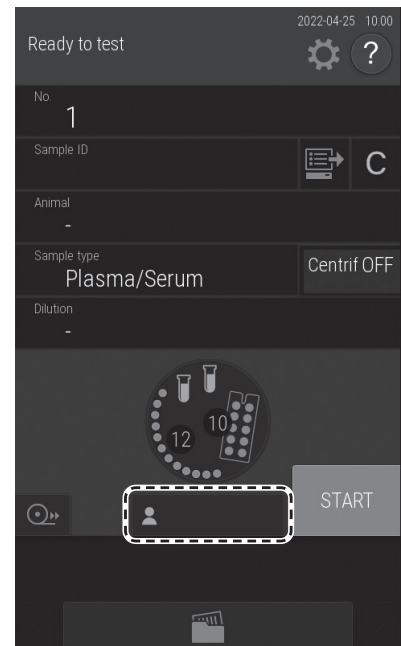
### When Inputting the Operator ID

1. Touch the operator ID button. The software keyboard appears.
2. Read the operator ID using the sample barcode reader.  
After reading is complete, the analyzer makes a beep sound. The operator ID is displayed on the LCD and is registered.

**NOTE:** Position the sample barcode reader properly facing to the barcode label. Otherwise, an incorrect reading may occur.

**NOTE:** Make sure the displayed ID is correct.

**NOTE:** To re-input a barcode, touch the Operator ID button, and then re-read the barcode.



### 5.1 Loading Consumables

To load tips and mixing cups, touch the display of consumables to display the loading screen. When loading is complete, press FINISH to exit.

**NOTE:** If there are not enough consumables (tips, mixing cups, diluent, reference fluid, etc.), sample application may be stopped.

**NOTE:** Load consumables while the analyzer is not applying samples.

### 5.2 Setting Tips

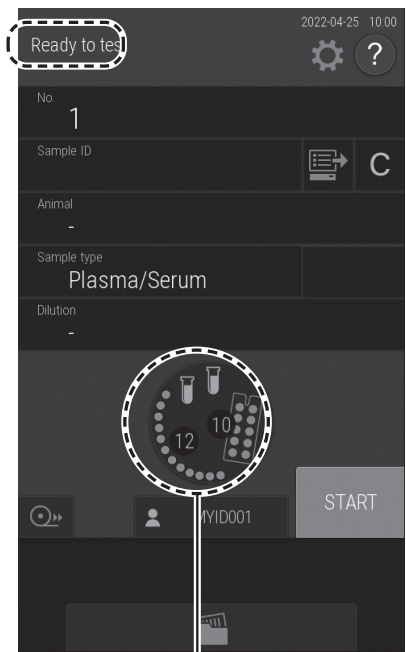
Tips are required for all measurements. Check the number of remaining tips on the LCD before performing measurements. If necessary, add new tips.



**WARNING**

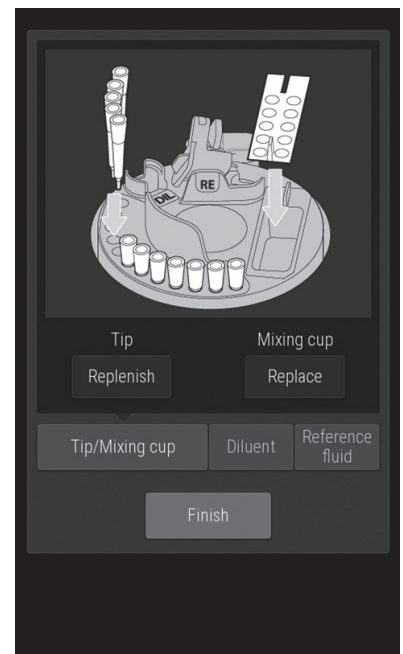
During sample application, touch STOP to stop application, and then load the tips. Loading is unsafe during sample application because the sampler and the consumable disk are moving.

1. With [Warming up], [Lamp warming up] or [Ready to test] displayed on the LCD, make sure that the analyzer is not applying samples.
2. Touch the consumables display on the LCD.



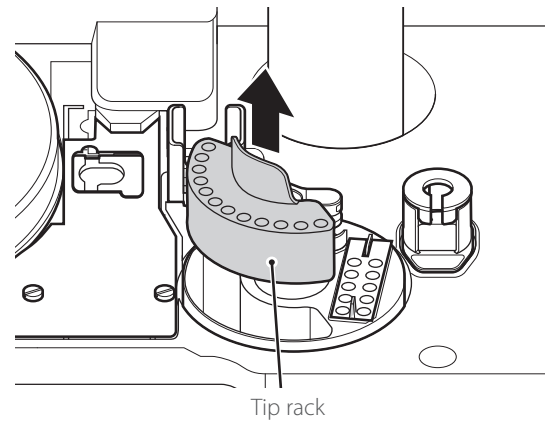
Consumable display

3. The Consumables loading screen is displayed.



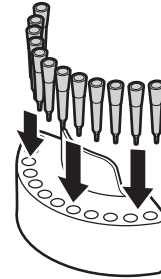
4. Remove the tip rack from the consumable disk.

**NOTE:** Always remove the tip rack from the consumable disk before loading tips.

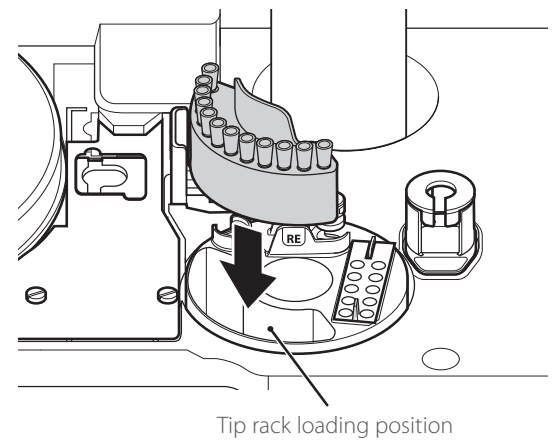


5. Load tips in all holes of the tip rack.

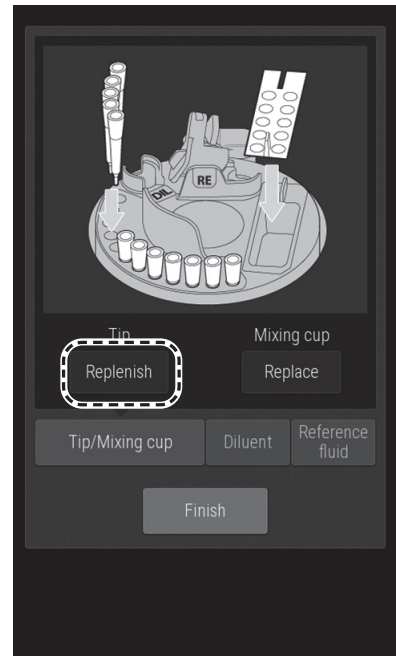
**NOTE:** Always set tips in all holes of the tip rack.



6. Load the tip rack on the consumable disk.



7. Check that tips have been set in all holes of the tip rack. And then, touch REPLENISH tips.
8. Touch FINISH to exit.



### 5.3 Loading Mixing Cups

Mixing cups are necessary for measurements requiring dilution. Furthermore, mixing cups are also necessary when urine (U) is selected for the sample type during an ISE measurement because measurement is performed automatically at 2x dilution. Check the quantity of mixing cups on the LCD before measurement. If necessary, load a new mixing cup. Each measurement uses one mixing cup. If no mixing cups remain, a measurement cannot be run.



#### WARNING

During sample application, touch STOP to stop application, and then load the mixing cup. Loading is unsafe during sample application because the sampler and the consumable disk are moving.



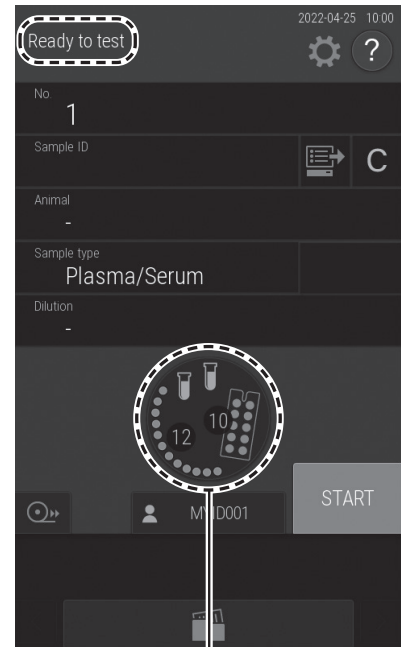
#### WARNING

Always wear gloves when handling used mixing cups to avoid biohazards.

**NOTE:** The quantity of mixing cups that can be used is displayed on the LCD. When the amount remaining is insufficient, a dilution measurement cannot be performed.



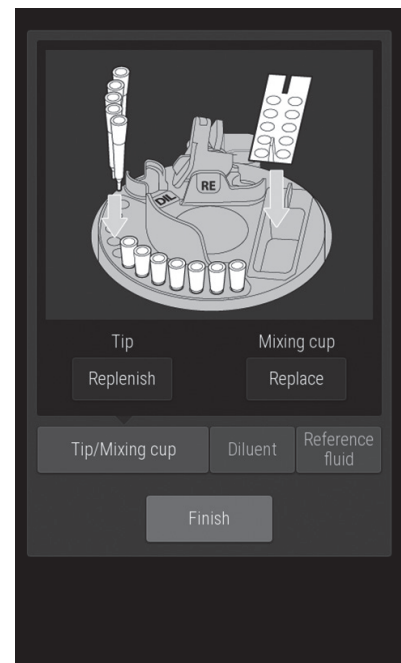
1. With [Warming up] or [Ready to test] displayed on the LCD, make sure that the analyzer is not applying samples.
2. Touch the consumables display on the LCD.



Consumable display



3. The Consumables loading screen is displayed.

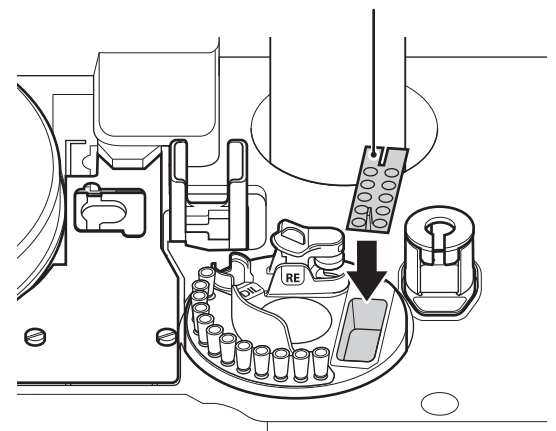


Mixing cup

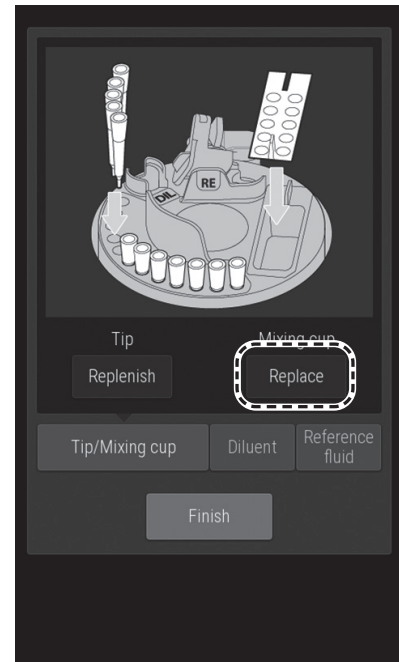
4. Remove the mixing cup from the consumable disk, and then set a new mixing cup.

 **WARNING**

Used mixing cups are infectious industrial waste. Process this waste in compliance with any applicable regulations in your country, such as by incineration, melting, sterilization, or disinfection.



5. Touch REPLACE of mixing cup.
6. Touch FINISH to exit.



## 5.4 Loading Diluent

Diluent is necessary for dilution measurements (refer to Section 3.6). Dilution measurement requires a specified diluent. Before measurement, refer to the technical documentation for the diluent to be used.



### WARNING

During sample application, touch STOP to stop application, and then load diluent. Loading is unsafe during sample application because the sampler and the consumable disk are moving.



### WARNING

Use specified tube for the diluent. Otherwise, measurement errors or malfunctions may occur.

The specified tubes for diluent are the PLAIN TUBE (1.5 ml and 0.5 ml).

**NOTE:** Configure the type of diluent container to be used via [Tube setting for diluent & reference fluid] in Mode function for administrator. Refer to Section 5.2

1. Prepare the diluent.

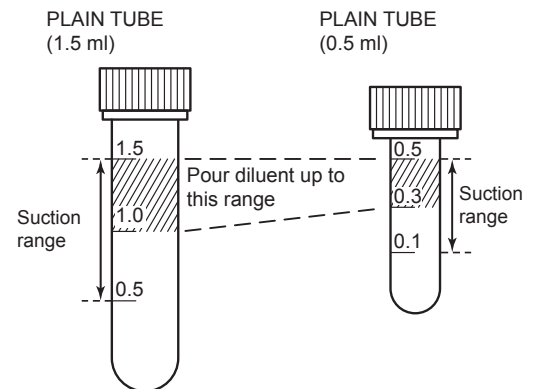
Pour the following amounts into each type of PLAIN TUBE.

For 1.5 mL tube: 1.0 to 1.5 mL

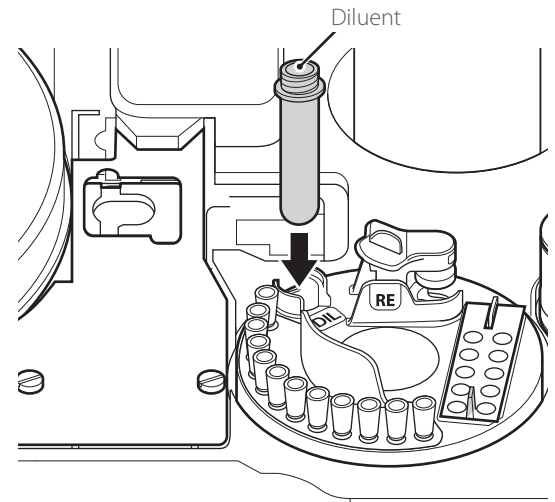
For 0.5 mL tube: 0.3 to 0.5 mL

**NOTE:** The suction range is as shown on the right.

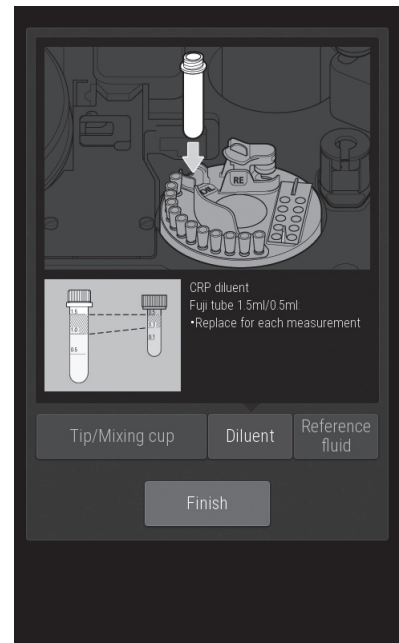
2. With [Warming up] or [Ready to test] displayed on the LCD, make sure that the analyzer is not applying samples.



3. Load a tube containing diluent.



**NOTE:** Touch the consumables display on the top screen and select the [Diluent] tab to display the diluent setting guidance screen. This operation is not required because only the guidance screen is displayed.



## 5.5 Loading Reference Fluid

Reference fluid is necessary for ISE measurements. Refer to Section 3.5



**WARNING**

When handling reference fluid, follow biohazard procedures (wear gloves, a lab coat, and safety goggles) in accordance with the medical handling rules of your facility. If you accidentally touch an item, immediately rinse the contaminated body part thoroughly under running water.



**WARNING**

Discard reference fluid according to the medical handling rules of your facility and related laws.



**WARNING**

During sample application, touch STOP to stop application, and then load the reference fluid. Loading is unsafe during sample application because the sampler and the consumable disk are moving.

 **WARNING**

Use a PLAIN TUBE (0.5 or 1.5 mL) for reference fluid. Otherwise, measurement errors or malfunctions may occur.

Configure the type of container to be used via [Tube setting for diluent & reference fluid] in Mode function for administrator. Refer to Section 5.2

 **WARNING**

Replace PLAIN TUBES (1.5 mL) within 12 hours.

Replace PLAIN TUBES (0.5 mL) for each measurement.

1. Prepare reference fluid.

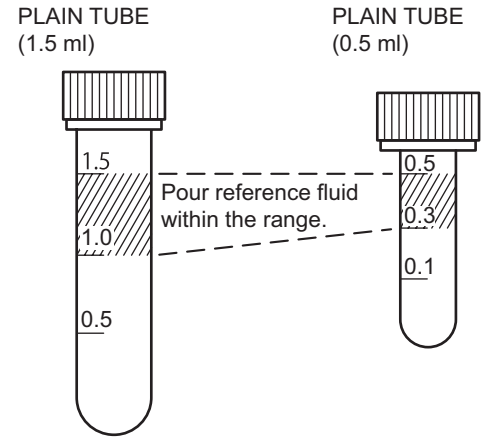
Pour the following amounts into each type of PLAIN TUBE.

For 1.5 mL tube: 1.0-1.5 mL

For 0.5 mL tube: 0.3-0.5 mL

**NOTE:** Use reference fluid after it reaches room temperature.

2. With [Warming up] or [Ready to test] displayed on the LCD, make sure that the analyzer is not applying samples.

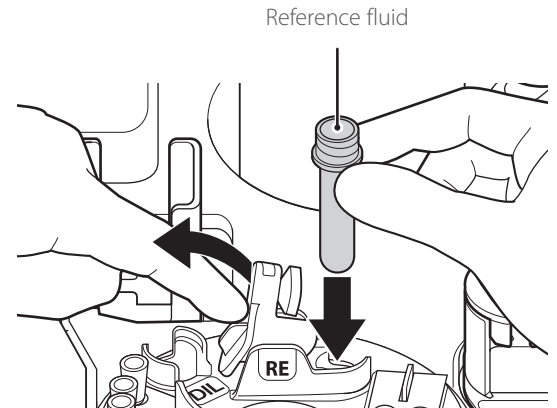


3. Load the tube containing the reference fluid.

Press the lever to open the lid and load the container.

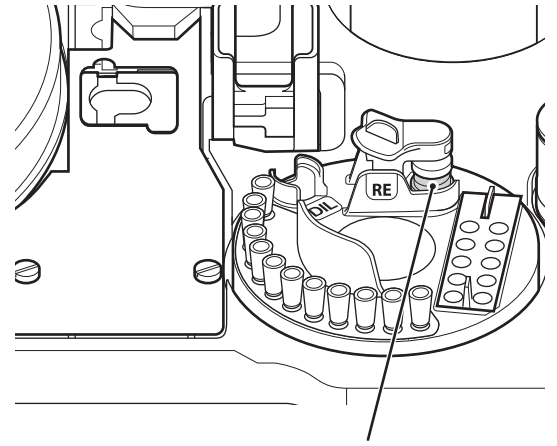
 **WARNING**

Clean the cap of the reference fluid every time you load the reference fluid.

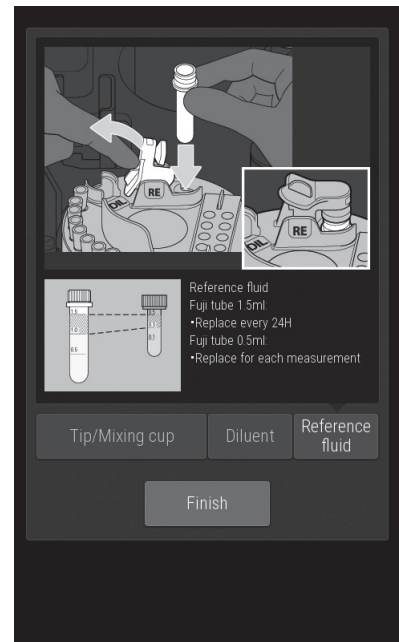


**NOTE:** Make sure the reference fluid cap is closed properly.

**NOTE:** Touch the consumables display on the top screen and select the Reference fluid tab to display the reference fluid setting guidance screen. This operation is not required because only the guidance screen is displayed.



Reference fluid



To keep the performance of the Element DCX Analyzer at its best, users must perform daily and periodic maintenance, and designated repair personnel must perform maintenance. When repairs are necessary, contact repair personnel.



**WARNING**

When you clean the analyzer, always wear gloves, a lab coat, and safety goggles.

If you accidentally touch a contaminant, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area.

Seek medical assistance if necessary.



**WARNING**

Always unplug the power cord before cleaning. (Cleaning of the transfer bar is excluded.)



**WARNING**

Process contaminated swabs or cloths used for cleaning the analyzer as infectious waste.



**WARNING**

Before cleaning and maintaining the analyzer, get training from our technical support staff.



**WARNING**

Refer to each section for information about usable solvents for cleaning and decontamination.



**WARNING**

Do not use alcohol to clean the sampler cover (translucent). Otherwise, the surface will be damaged.

After cleaning, always connect the power cord, switch on the power, and then check operation.



**WARNING**

If you do not perform the maintenance in this manual, the analyzer's performance and specifications will not be maintained, which may negatively affect the measurement values.



**WARNING**

Be sure to reassemble the parts removed for maintenance and tighten thumbscrews securely. Otherwise, measurement values may be negatively affected.

**NOTE:** If the LCD (touch panel section) becomes soiled, use a soft cloth or a cloth soaked in a small amount of ethyl alcohol to lightly wipe it.

**NOTE:** When cleaning the outer covers of the equipment, wipe using a soft cloth moistened with water or ethyl alcohol for disinfection (excluding the sampler cover).

## 6.1 Periodic Maintenance Items

### 6.1.1 Items for Daily and Periodic Inspection by the User

Users must perform the daily and periodic maintenance and replacement of parts in the following table.

Location	Cleaning Interval	Inspection Interval	Replacement Interval	Procedure
Air filter	Once a month	–	–	Refer to Section 6.2.
Transfer bar	Once every 3 months, or as appropriate, such as when inaccurate measurement values occur	–	–	Refer to Section 6.3.
Incubator	Once every 3 months, or as appropriate, such as when inaccurate measurement values occur	–	–	Refer to Section 6.3.
Sample application unit	As appropriate, such as when a slide transfer error or tip ejection error occurs	–	–	Refer to Section 6.3.
ISE unit	Once every 3 months, or as appropriate, such as when inaccurate measurement values occur	–	–	Refer to Section 6.3.
Recording paper	–	–	Appearance of red lines on both sides of paper	Refer to Section 6.4.
Light source lamp	–	–	When a lamp replacement error occurs, or when the cumulative lighting time exceeds 1,000 hours	Refer to Section 6.5.
Sampler O-ring	–	Perform leak check procedure every 3 months	–	Refer to Section 6.6.
Slide reading section	When slide reading errors occur frequently	–	–	Refer to Section 6.7.
Reference fluid cap packing	When replacing reference fluid	–	If it becomes cracked	Refer to Section 6.8.



#### WARNING

After inspection, always connect the power cord, switch on the power, and then check operation.

**NOTE:** The standard number of slides used per year for this analyzer is assumed to be 7,200 colorimetric slides and 240 ISE slides. (In the case of 240 days of use per year, 30 colorimetric slides/day and one ISE slide/day)

## 6.2 Cleaning the Air Filters

The air filters should be checked and cleaned once a month.



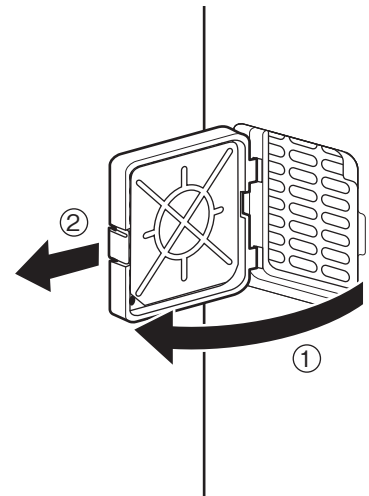
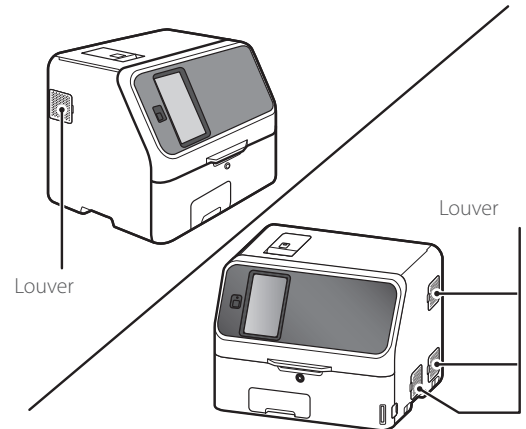
### IMPORTANT

If the air filters are not cleaned, an increase in the temperature inside the analyzer may negatively affect the measurement values.

**NOTE:** Clean all 4 filters.

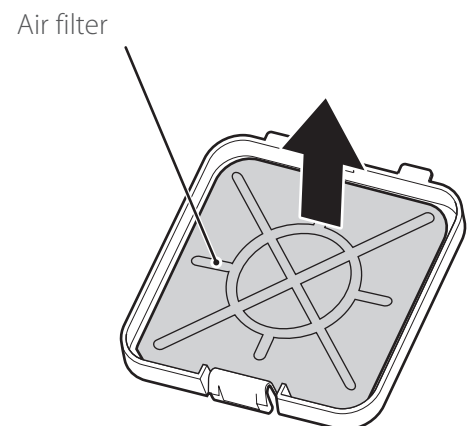
1. Switch off the analyzer power.
2. Remove the four louvers and pull out the air filters located inside of the louvers.

Lift the louver upward ① and then pull forward ② to remove.



3. Remove dust adhering to the filter with a vacuum cleaner or running water.

**NOTE:** If you wash the filter with running water, make sure it is dried well before setting in the analyzer.





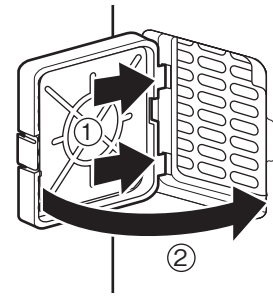
4. Insert the filter into the louver and put the louver back in the analyzer.

Push up the louver ① and then push it toward ②.



### IMPORTANT

If the analyzer is used without setting the filters, measurement values may be negatively affected.



## 6.3 Inspecting and Cleaning the Transfer Bar, Incubator, Sample Application Unit, and ISE Unit

Measuring results are affected by stains (from blood samples, etc.) inside of the incubator and ISE unit. These parts should be checked and cleaned at least once every three months. When a slide transfer error or a tip ejecting error occurred, clean the sample application unit.



### WARNING

Always wear gloves, a lab coat, and safety glasses while working.

If you accidentally touch a contaminant, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area.

Seek medical assistance if necessary.



### WARNING

Dispose of contaminants used for cleaning as infectious waste.



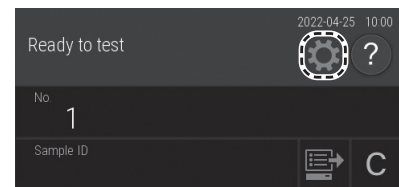
### IMPORTANT

Staining of the incubator, spotting parts, and electrolyte parts with samples such as blood may affect the measured values.

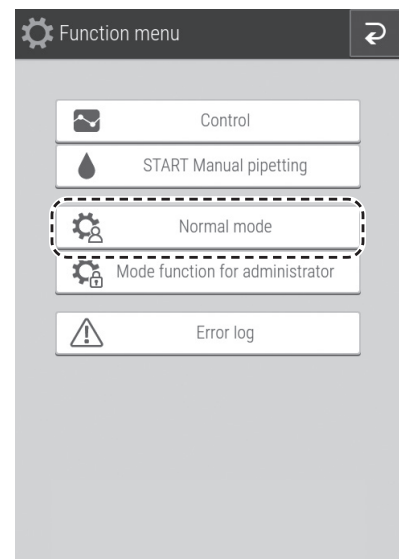
### 6.3.1 Reference Plate Level Check

Perform [Reference plate level check] before cleaning.


1. Touch 

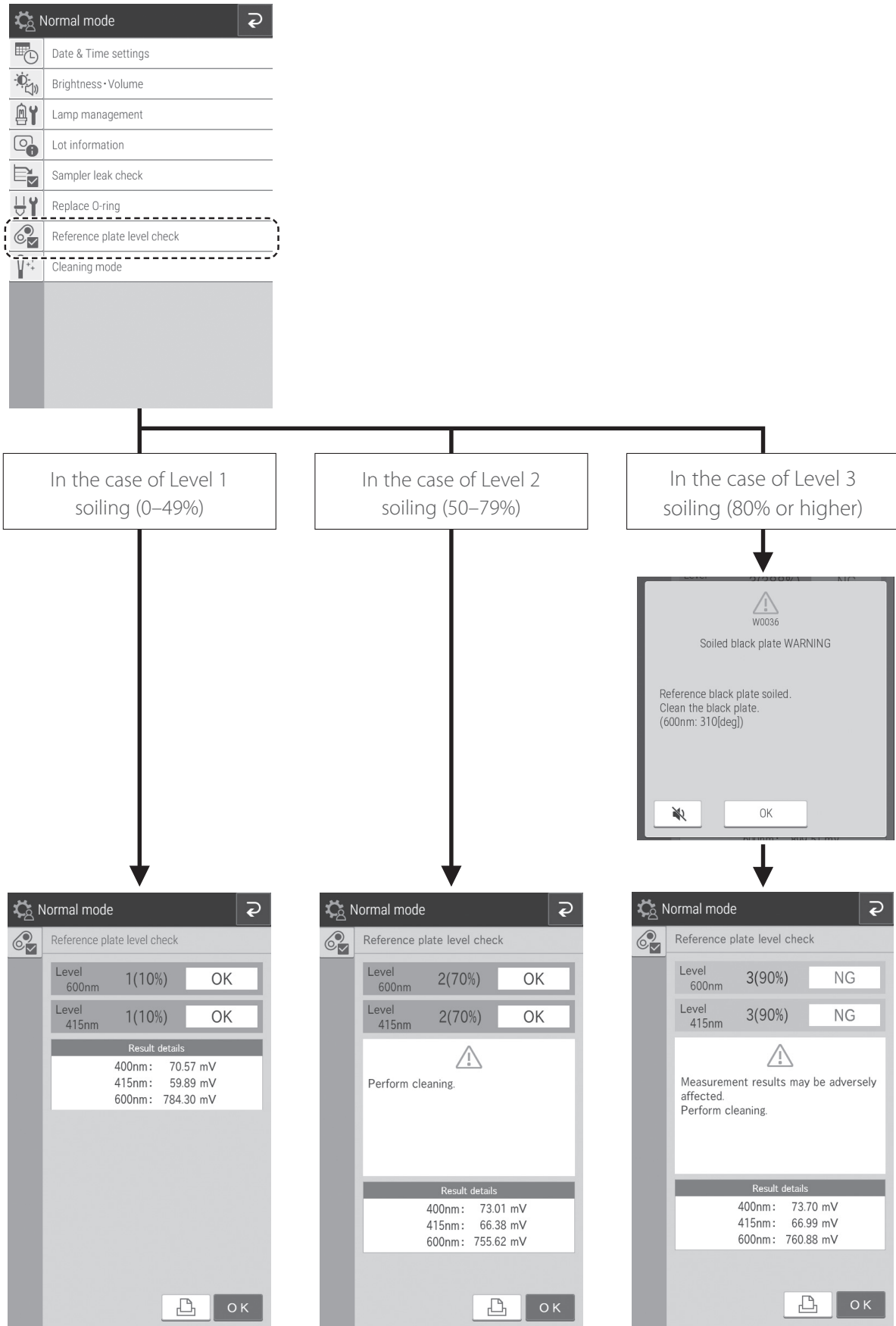


2. Touch Normal mode.
3. Touch [Reference plate level check] to run a check.  
If check ends, the Check results screen appears.



4. Check the results of [Reference plate level check].

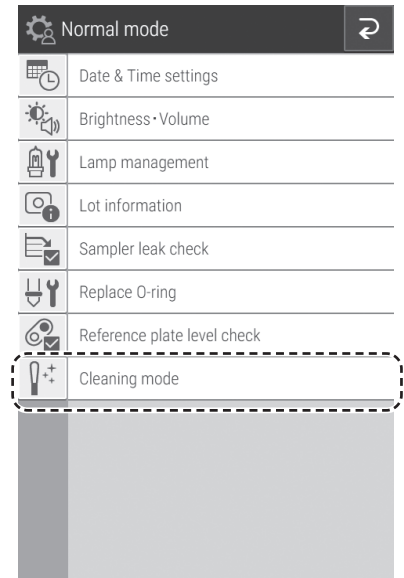
When  has appeared in the check results, cleaning is necessary. Touch OK. Using the procedure on the following pages, clean the transfer bar, incubator, sample application unit, and ISE unit.



## 6.3.2 Cleaning the Transfer Bar, Incubator, Sample Application Unit, and ISE Unit

### Cleaning the transfer bar and ISE unit.

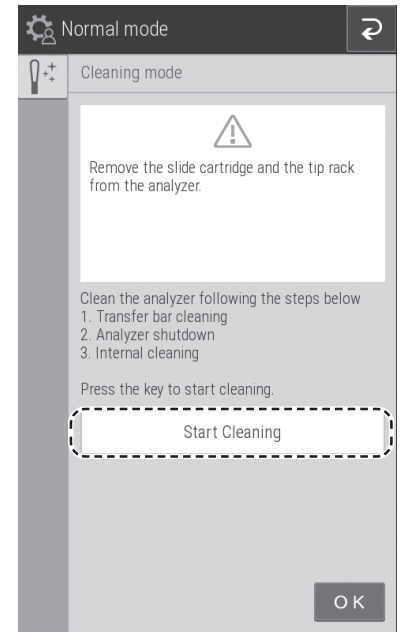
1. Touch [Cleaning mode] in Normal mode.



2. Remove the slide cartridge and the tip rack from the analyzer.

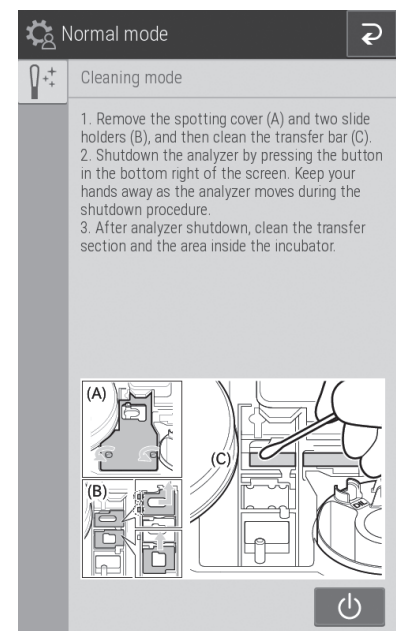
3. Touch START CLEANING.

**NOTE:** Keep your fingers clear as the analyzer runs.

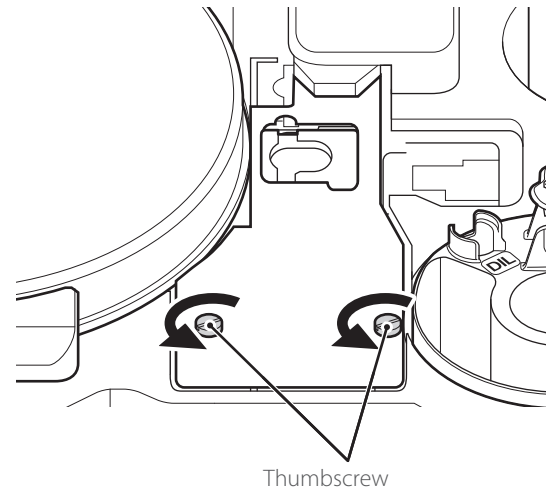


4. The screen to the right appears.

**NOTE:** Although step 2 on the screen prompts to power off the analyzer, don't power off the power down is in step 10.



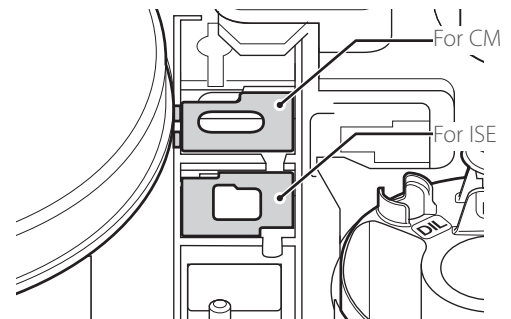
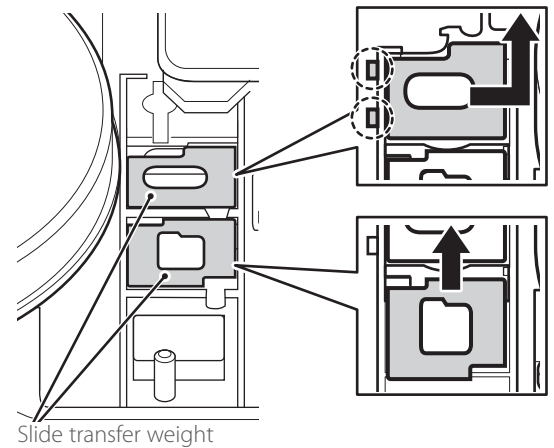
- Loosen the 2 thumbscrews and pull the sample application unit cover forward to remove it.



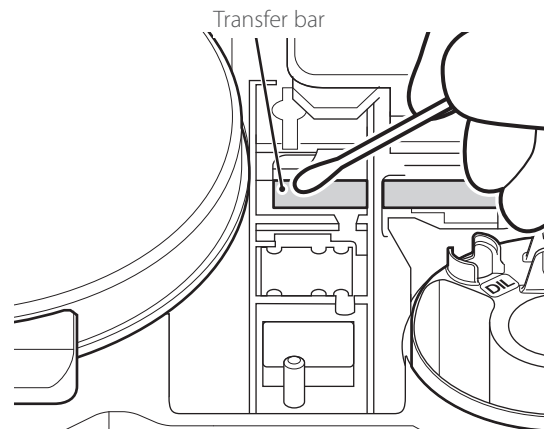
- Remove the two slide transfer weights.

**NOTE:** There are 2 types of slide transfer weight, one each for CM tests and ISE tests.

The slide transfer weight for CM tests has hooks on the left, so lift up from the right before removing it. When installing it, insert the hooks before loading it.



- Use gauze or a cotton swab moistened with water or isopropyl alcohol to wipe the staining of the removed slide transfer weight.
- Use gauze or a cotton swab moistened with water or isopropyl alcohol to wipe the upper surface of the transfer bar visible in the sample application unit.
- Next, clean the incubator, sample application unit, and ISE test unit.



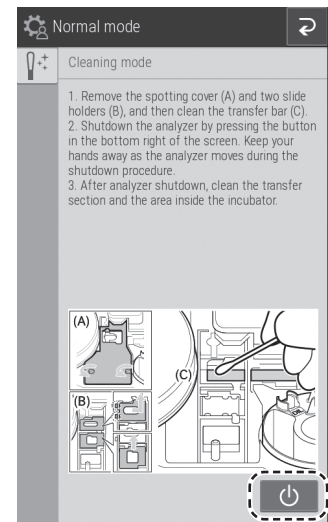
10. Touch  to switch off the power.

 CAUTION

Keep your fingers clear as the analyzer runs.

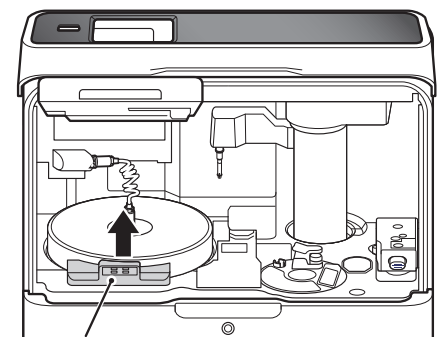
 WARNING

Always unplug the power cord before the following procedure.



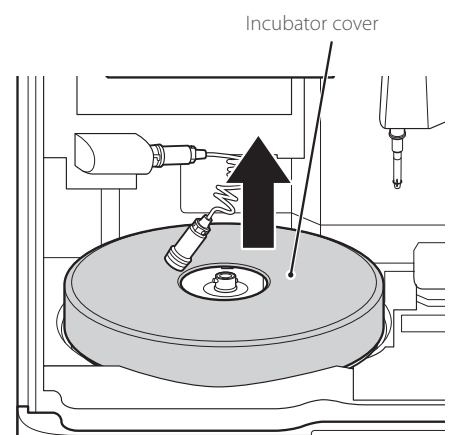
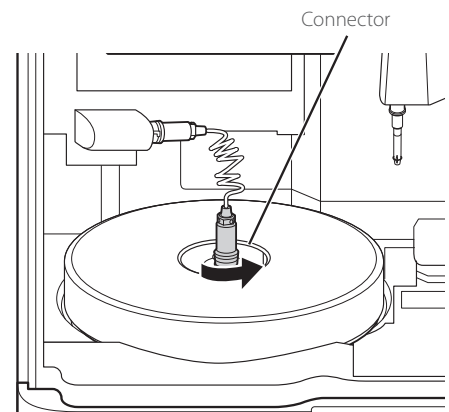
## Incubator

1. Open the sampler cover and panel unit. Remove the panel unit pedestal.



Panel unit pedestal

2. Unplug the connector of the incubator cable (low end) by turning it to the left.



3. Remove the incubator cover.
4. Loosen the 5 screws on the upper surface of the incubator, and then remove the incubator.
5. Moisten the cloth with lukewarm water or isopropyl alcohol.

**!** IMPORTANT

Wring the cloth when it is soaked too much. If water gets inside the machine, it will cause rust.

6. Place the removed incubator on a flat surface with the pressure plates facing up.

**!** IMPORTANT

Put on gloves before beginning wiping.

7. If dirt is noticeable or a transport error occurs within the cleaning cycle, shorten the cleaning cycle (to at least once a week).

8. Wipe the tapered part of each pressure plate (the metallic luster taper part around the black part).

**NOTE:** Wipe the entire circumference as blood stains may be difficult to see by eye.

9. Wipe the surface (black part) of each pressure plate.

**NOTE:** Wipe gently to avoid scratching, as it will affect the measurement values

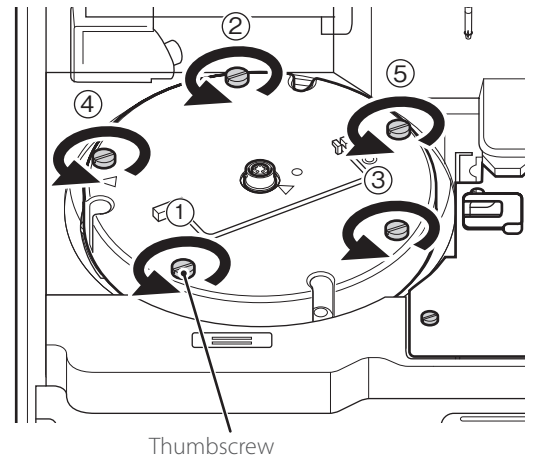
**!** IMPORTANT

When wiping, change the cloth surface for each cell. Otherwise, dirt may be transferred.

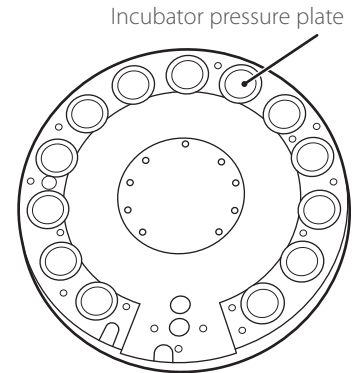
**!** IMPORTANT

After cleaning, do not touch the pressure plate surface with your fingers.

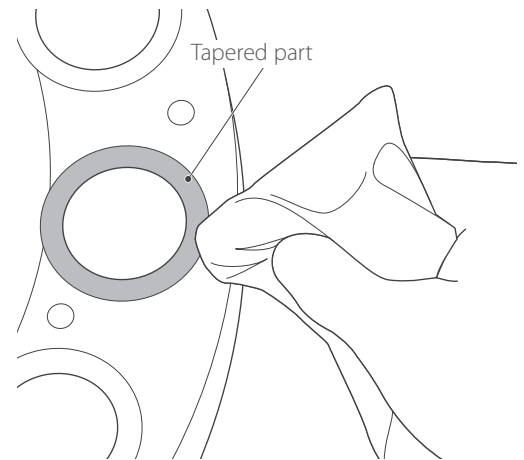
This may affect the measurement values.



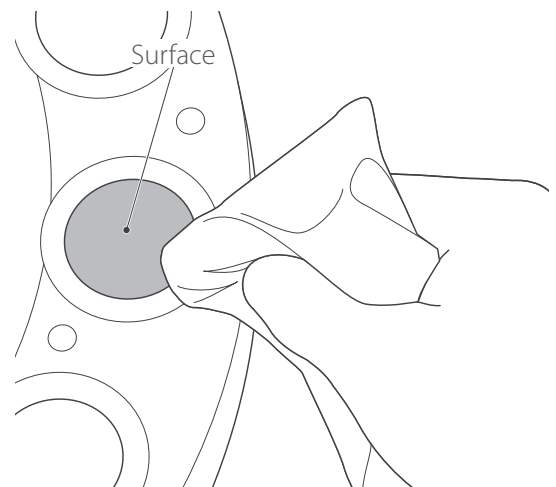
Thumbscrew



Incubator pressure plate

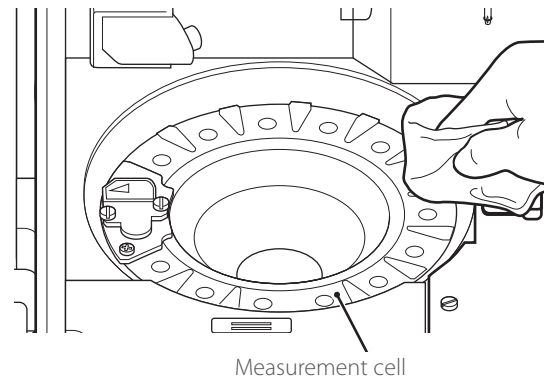


Tapered part

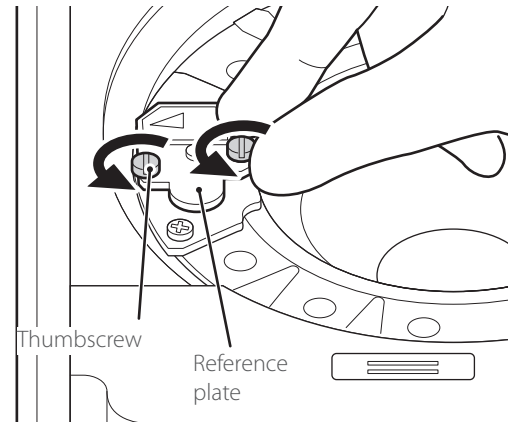


Surface

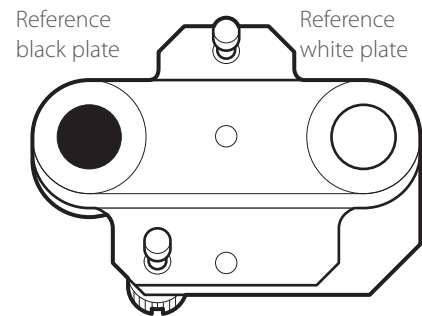
10. Wipe the lower part (measurement cells) in the same way.



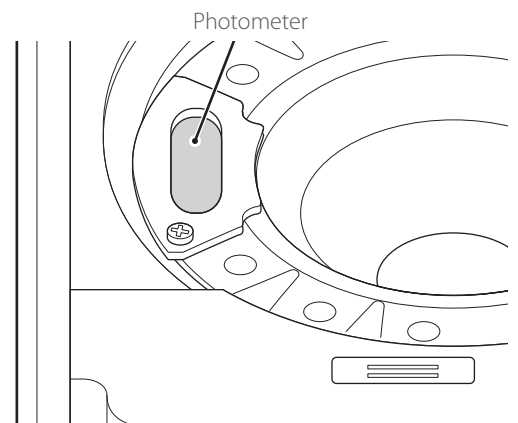
11. Loosen the 2 screws fixing the reference plate and remove the plate from the analyzer.



12. Turn over the reference plate and clean the white plate and black plate with a dry cotton swab or using a swab moistened with isopropyl alcohol and then dry with a new cotton swab.



13. Clean the photometer head with a dry cotton swab or using a swab moistened with isopropyl alcohol and then dry with a new cotton swab.



- Replace the reference plate.  
Tighten the 2 thumbscrews evenly.

**!** IMPORTANT

Tighten the two thumbscrews securely. Otherwise, the measurement results may be negatively affected.

### Sample Application Unit

- Make sure that the sample application unit cover and two slide transfer weights were removed for cleaning of the transfer bar.
- Wipe the sample application unit with a soft cloth or a cotton swab moistened with water or isopropyl alcohol and then dry with a new cotton swab.

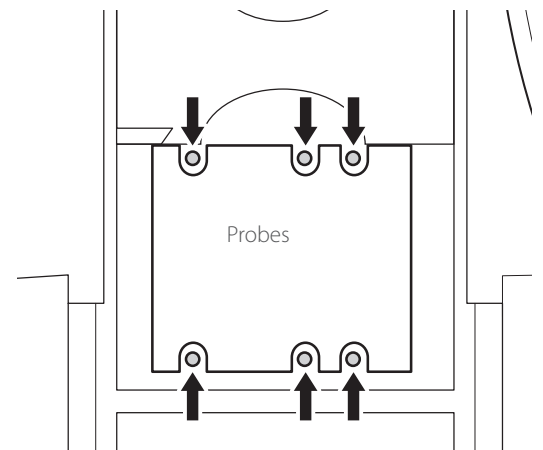
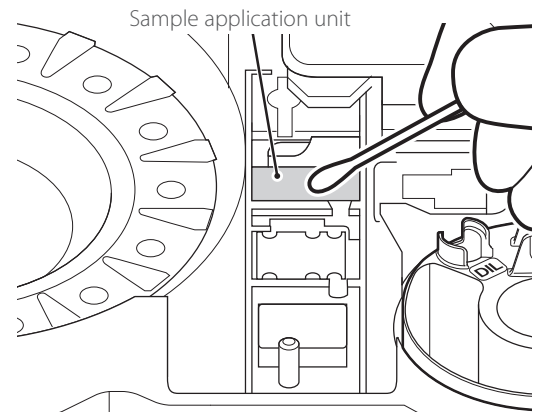
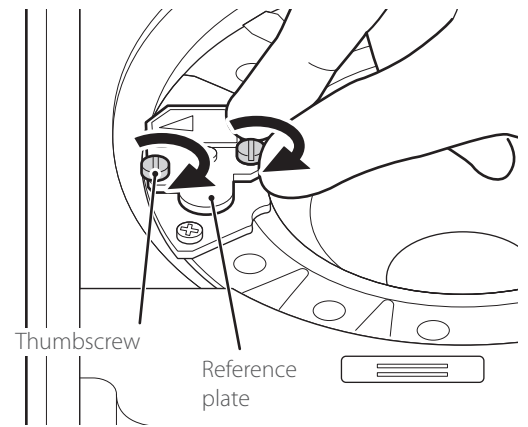
### ISE Unit Probe

Make sure there is no dust on the six ISE probes. When you clean the ISE probes, wipe off the dust using a dry cotton swab.

**NOTE:** Do not use solvents, such as methyl alcohol or isopropyl alcohol.

**!** CAUTION

ISE probes are needle-shaped parts. Do not touch them directly by hand. Be careful not to bend the probes.





### 6.3.3 Reassembling Parts and Ending Cleaning

1. Reassemble the incubator.

Align the arrow marks on the incubator and the reference plate, and then tighten the 5 thumbscrews evenly by tightening opposing thumbscrews in numerical order (① to ⑤).

**!** IMPORTANT

Tighten the five thumbscrews securely. Otherwise, the measurement results may be negatively affected.

2. Reassemble each part as shown in the image on the right.
  - ① Load the slide transfer weights.
  - ② Load the sample application unit cover and tighten the thumbscrews.
  - ③ Load the incubator cover.
  - ④ While aligned with the groove, plug the connector of the incubator cable into the incubator and then lock it by turning it to the right.
  - ⑤ Load the panel unit pedestal and close the panel unit display.

**!** IMPORTANT

Tighten the thumbscrews securely. Otherwise, the measurement results may be negatively affected.

**!** IMPORTANT

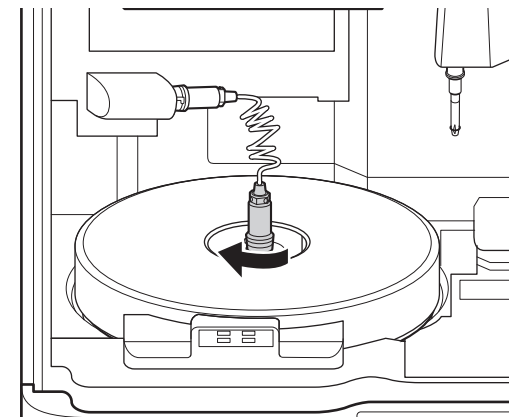
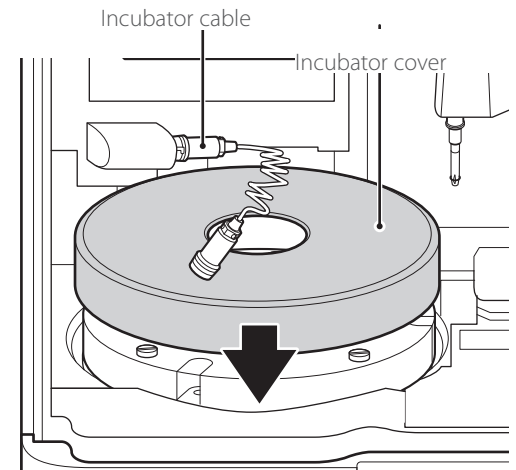
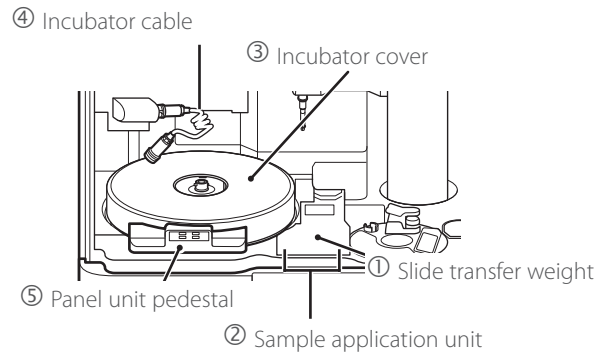
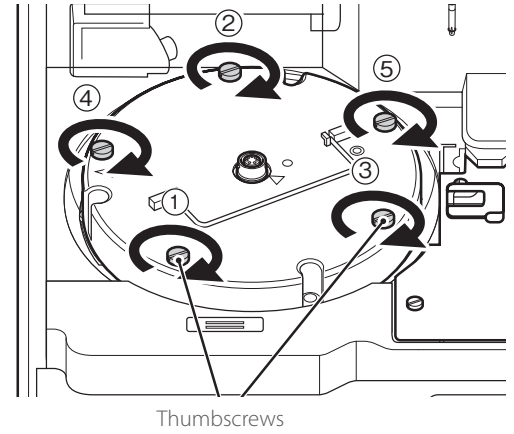
Be sure to attach the incubator cover. Otherwise, the measurement results may be negatively affected.

**NOTE:** When you insert the connector, make sure not to twist or apply too much pressure to the cable. If the cable is twisted more than once, it may break.

3. Close the panel section to end cleaning.

Run [Reference plate level check] again, and then check the results.

**NOTE:** Wait until the temperature of the incubator is steady.

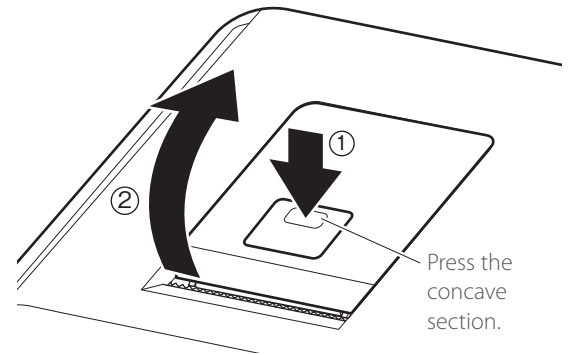


## 6.4 Replacing Recording Paper

When red lines appear along the sides of the recording paper, the printer is nearly out of paper, so replace the recording paper roll with a new one.

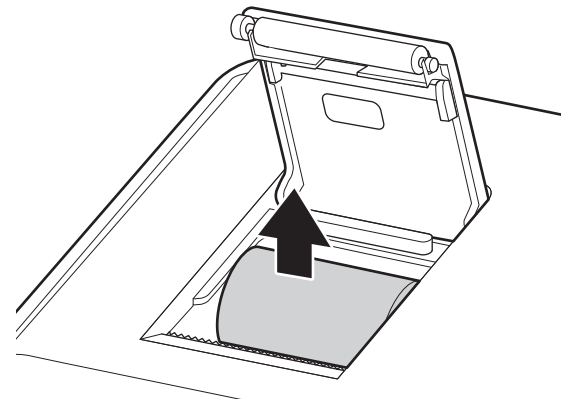
**NOTE:** Use the recording paper specified for the Eelement DCX Analyzer

1. Press the section indicated in the illustration ① to release the lock, and then open the cover ②.

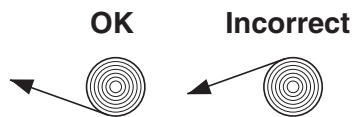


2. Remove the remaining recording paper.
3. Load the new recording paper.

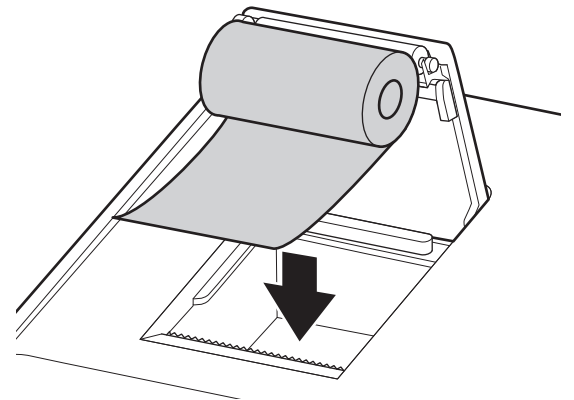
**NOTE:** If the paper replacement was performed during a measurement, the measurement results might be printed out.



**NOTE:** Set the paper roll so the paper is pulled from under the paper roll as shown below.



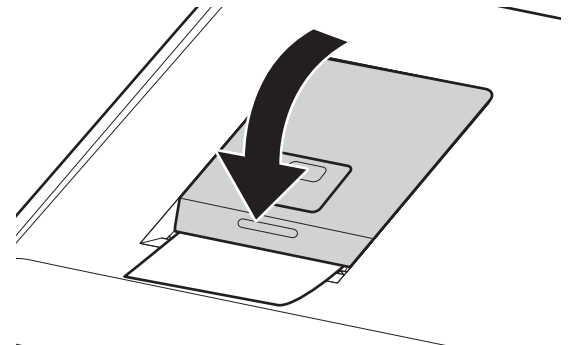
**NOTE:** If the paper is loaded in reverse, no text is printed on the thermal paper.



4. Pull the top end of the recording paper out slightly, and then close the cover.

**NOTE:** When setting a new recording paper, pull the edge of paper out to where the tape for fixing edge is affixed. Failure to observe this precaution may cause printing malfunction.

**NOTE:** Close the cover securely until it clicks. Otherwise, the paper feed may fail and the test results will not be printed out.



## 6.5 Replacing and Cleaning the Light Source Lamp

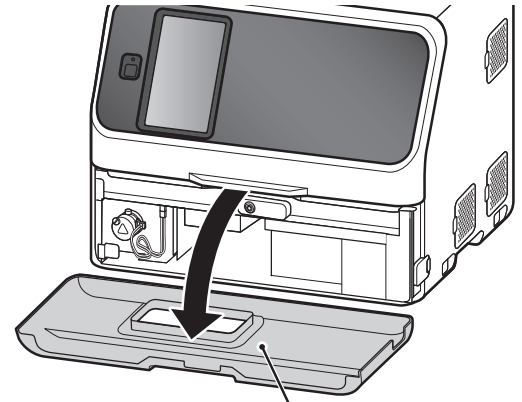
The average life of the lamp is about 1,000 hours. Replace the lamp if a lamp replacement error occurs or the cumulative lighting time of the lamp approaches 1,000 hours.



### CAUTION

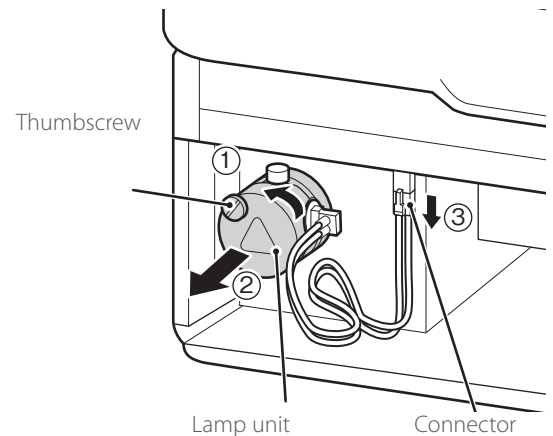
The light source lamp gets very hot. Before cleaning the light source unit or replacing the light source lamp, turn off the power, wait at least 5 minutes, and then check the lamp has cooled.

1. Pull out the disposal box, and then remove the front bottom cover.

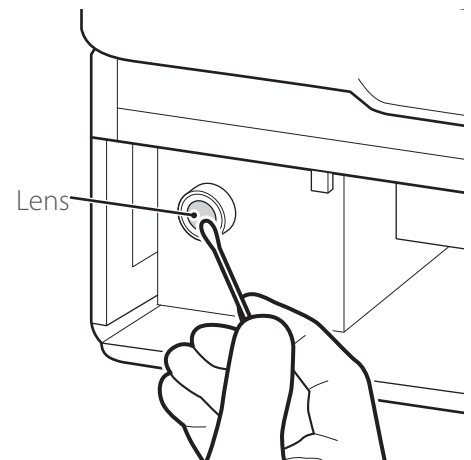


Front bottom cover

2. Loosen the thumbscrew as shown in the right image and remove the lamp unit.
3. Unplug the connector of the light source lamp and remove the lamp unit.



4. Wipe the light source unit lens using a dry cotton swab or a swab moistened with isopropyl alcohol.

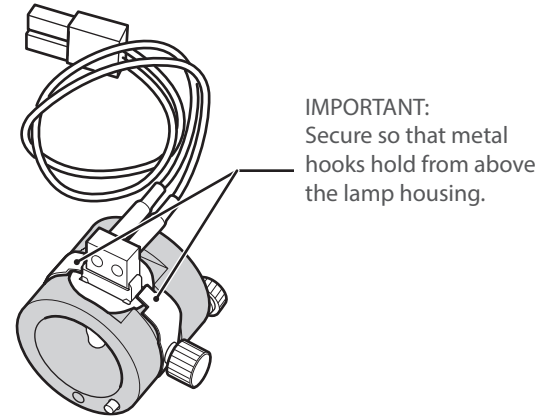
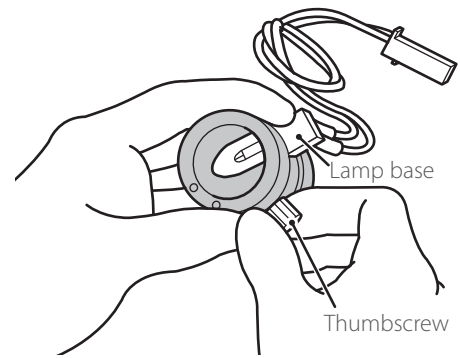


- Turn the thumbscrew of the lamp unit to the left, remove the lamp, and then replace it with a new one.

**!** IMPORTANT

**Tighten the thumbscrews securely. Otherwise, the measurement results may be negatively affected**

**NOTE:** When you replace the lamp, hold it by its base. Do not touch the glass surface with bare hands.



- Insert the connector of the light source lamp.
- Insert the lamp unit into the analyzer with thumbscrew B facing up. Tighten thumbscrew A securely.

**!** IMPORTANT

**Tighten the thumbscrew securely. Otherwise, the measurement results may be negatively affected.**

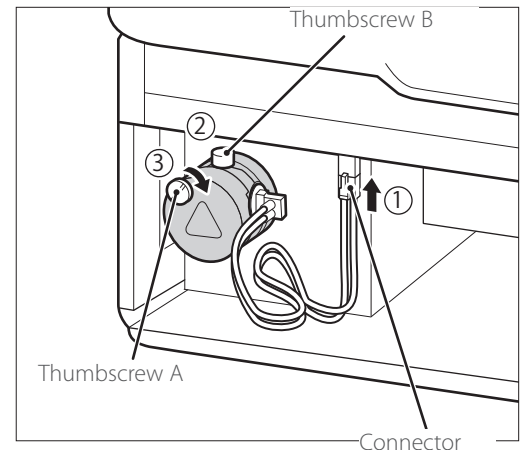
- Attach the front bottom cover, load the disposal box, and then switch on the power of the Element DCX Analyzer.

**NOTE:** Put the front bottom cover back horizontally as it was.

**!** IMPORTANT

**Be sure to load the disposal box. If the analyzer is used without the box, the measurement results may be negatively affected.**

- After starting the analyzer, go to [Lamp management] in Normal mode, and then reset [Lamp ON time].



## 6.6 Maintenance of Sampler O-ring

The sampler nozzle O-ring wears over time. Perform a sample leak check every 3 months.



### WARNING

When inspecting and replacing O-rings, always wear gloves, a lab coat, and safety goggles.

If you accidentally touch a contaminant, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area. Seek medical assistance if necessary.



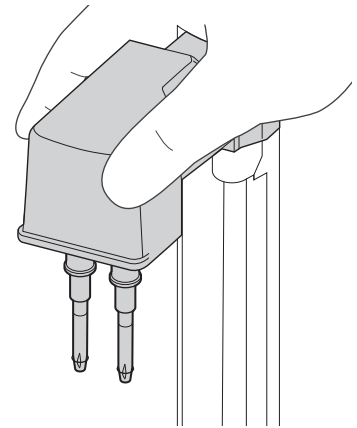
### IMPORTANT

If you do not inspect and replace the sampler O-ring, if indicated, the sample application volume will be inaccurate, which may negatively affect the measurement values. The specific leak check tool must be used.

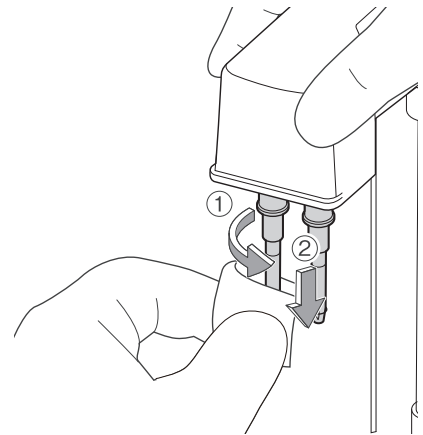
### 6.6.1 Cleaning the Sampler O-ring

Clean the sampler O-ring once a week as follows.

1. Prepare a dry/damp gauze or cloth (eyeglass wipes, lint-free cloth, etc.).
2. Switch off the analyzer before cleaning.
3. Rotate the sampler part toward you.



4. While holding the arm with one hand, wipe the O-ring while rotating the damp cloth 3 to 4 turns around the circumference. Next, wipe down from the top to cover the entire circumference. Similarly, wipe the other O-ring around the circumference and down from the top.
5. Use a dry cloth to lightly wipe the moisture from the O-ring portion. Remove any foreign objects remaining on the O-ring.
6. Perform a measurement and confirm that no errors occur.



### IMPORTANT

Do not store the AUTO TIPS with the storage box lid open. If AUTO TIPS contaminated with dust or dirt are mounted to the nozzles, the dirt or dust may adhere to the O-rings, causing dispensing/dilution clogging errors or leak check failure.



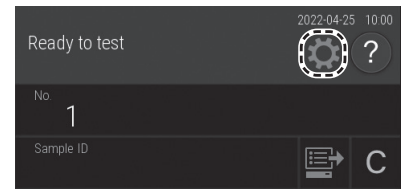
### IMPORTANT

If dirt is noticeable or an error occurs, shorten the cleaning cycle (once a week or more).

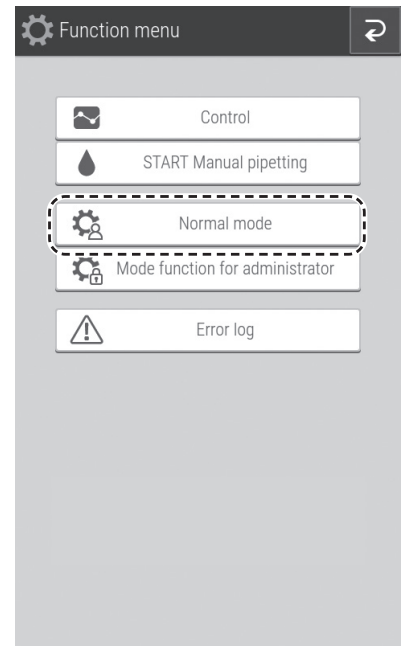
7. If an error occurs, inspect the sampler O-ring.

## 6.6.2 Inspecting the Sampler O-ring

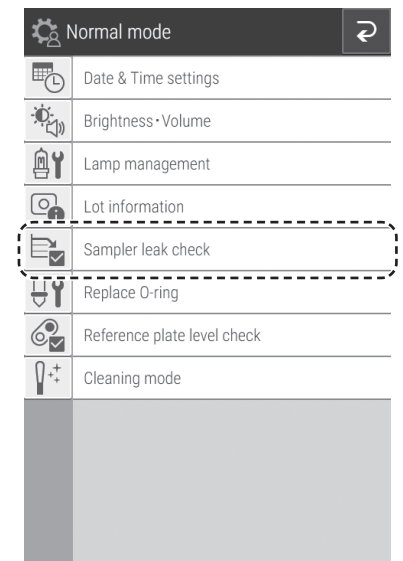
1. Touch 



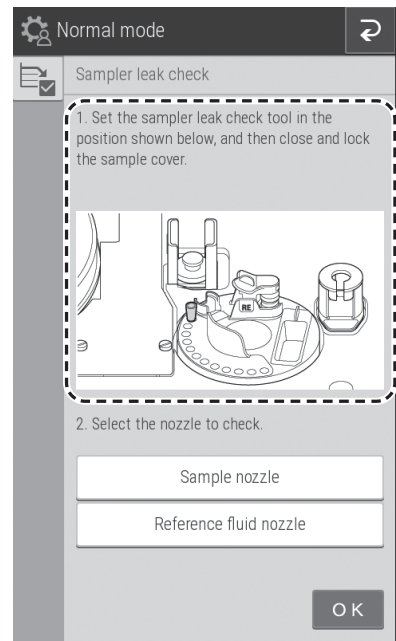
2. Touch NORMAL MODE.



3. Touch SAMPLER LEAK CHECK.



4. Follow the on-screen instructions to prepare for the leak check.



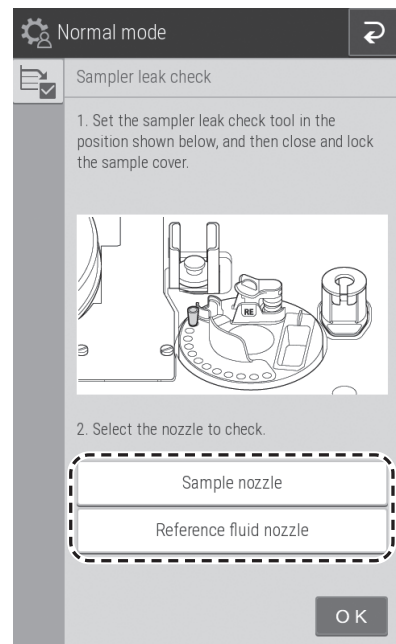
5. Touch the nozzle to be checked to select it, and then run the leak check.

Once check ends, the Check results screen appears.



**CAUTION**

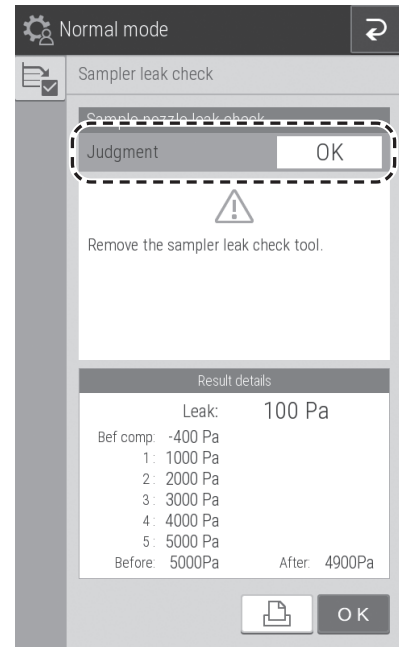
Keep your fingers clear as the sampler unit and consumable disk move.




6. Check the results of the [Sampler leak check].

If the check results are OK, it is not necessary to replace the O-ring.

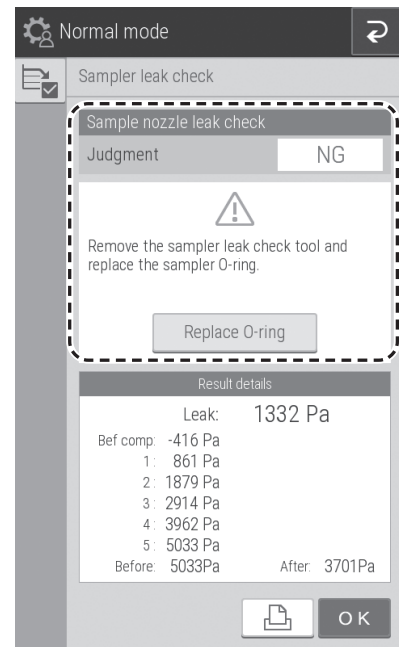
**NOTE:** The check results can be printed by touching .



If the check results are [NG], touch the [O-ring] button, and then replace the O-ring according to the following procedure.

**NOTE:** The check results can be printed by touching .

7. Once the check ends, open the sampler cover, and then remove the sampler leak check tool mounted on the sampler nozzle by hand.



### 6.6.3 Exchanging the Sampler O-ring

The sampler nozzle O-ring wears over time. Replace it if indicated.

 **WARNING**

Process used O-rings as infectious waste.


 **IMPORTANT**

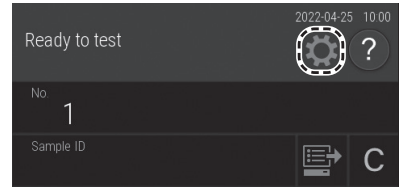
If you do not replace the O-ring periodically when indicated, the sample application volume will be inaccurate, which may negatively affect the measurement values.

 **IMPORTANT**

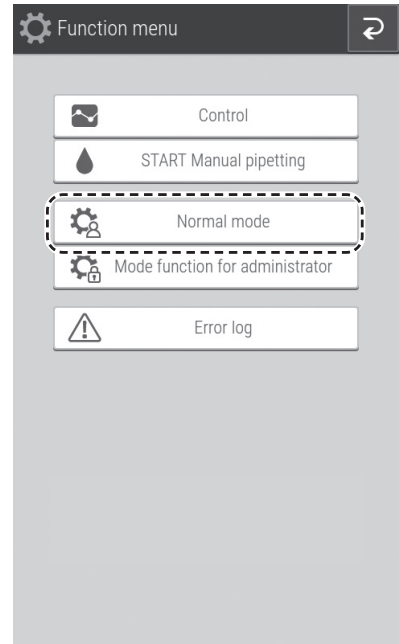
Be sure to use the O-ring designed for the Element DCX Analyzer. Otherwise, the sample application volume will be inaccurate, and the measurement results may be negatively affected.



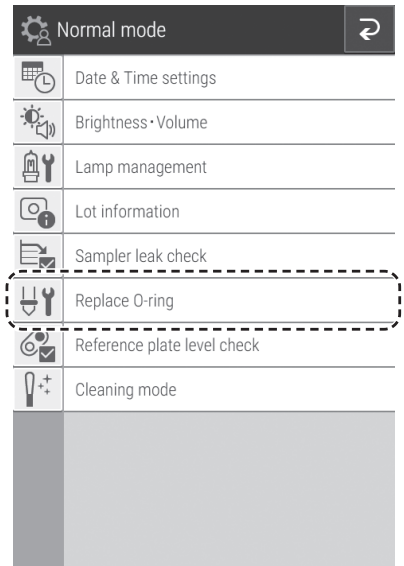
1. Remove the sample rack and slide cartridge.
2. Touch .



3. Touch NORMAL MODE.



4. Touch REPLACE O-RING.



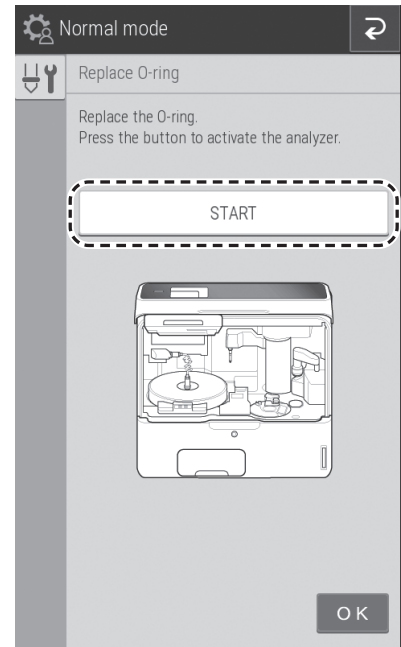
5. Touch START.

The sampler nozzles turn to the replacement position.



**CAUTION**

Keep your fingers away as the sampler unit moves.

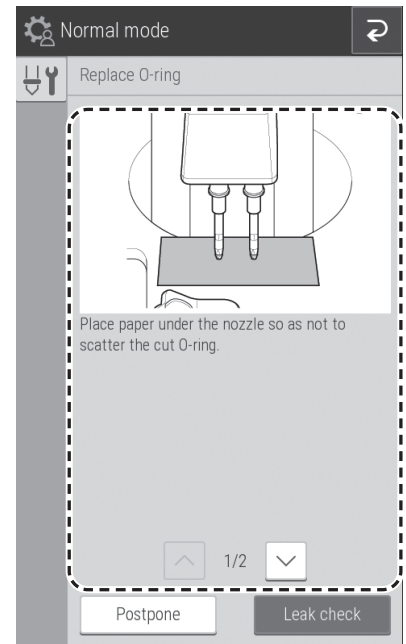


6. Follow the on-screen instructions to replace the O-ring.



If this button is touched, the explanation to the right appears.

7. Touch LEAK CHECK to check for leaks.



## 6.7 Cleaning the Slide Reading Section

When a slide-detection error has occurred, dust and other soiling may be the cause. Clean the slide reading section to avoid these errors.



### WARNING

Always wear gloves, a lab coat, and safety glasses while working.

If you accidentally touch a contaminant, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area.

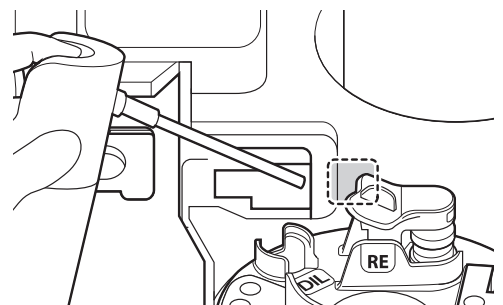
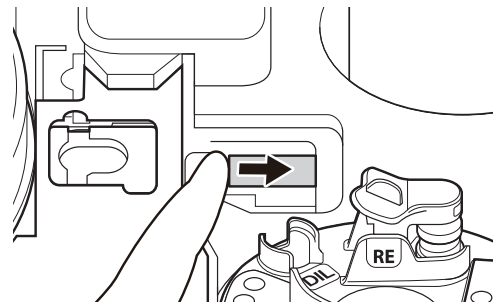
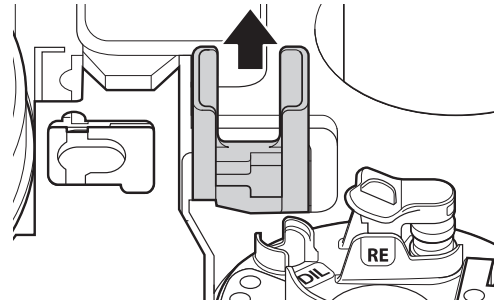
Seek medical assistance if necessary.



### WARNING

Dispose of contaminants used for cleaning as infectious waste.

1. Switch off the analyzer power.
2. Open the sampler cover and panel unit.
3. Remove the slide cartridge.
4. Using your finger, move the transfer bar under the right cover.
5. Blow air from the gap where the slide cartridge is placed, as shown in the right image.



## 6.8 Cleaning and Replacing the Reference Fluid Cap

Clean the reference fluid cap each time the reference fluid is replaced.

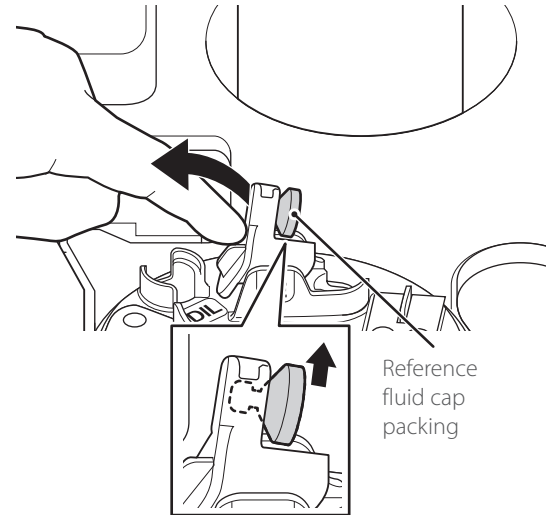
Replace the reference fluid cap packing if it becomes cracked.



### IMPORTANT

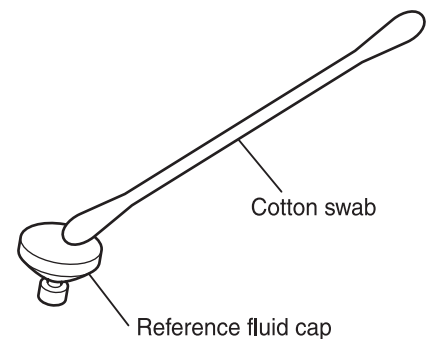
If you do not clean and replace the reference fluid cap, the reference fluid will be concentrated, which may negatively affect the measurement values.

1. If reference fluid is loaded, remove the reference fluid tube and discard it.
2. Remove the reference fluid cap as shown in the image on the right.



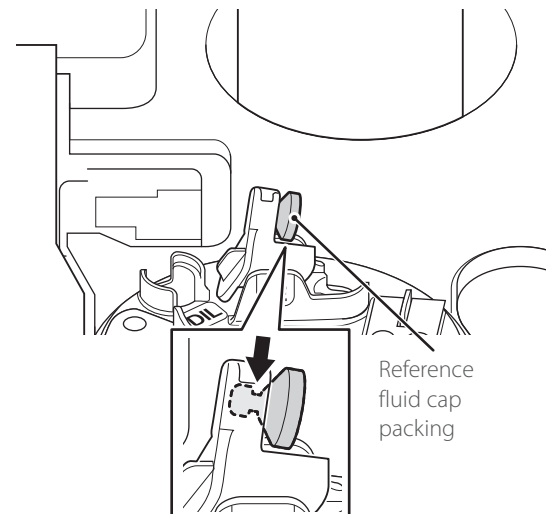
3. Wipe off the reference fluid cap using a cotton swab or gauze moistened with lukewarm or cold water as shown in the illustration on the right, and then allow it to dry.

**NOTE:** Replace it with a new cap if stains cannot be wiped off.



4. Set the reference fluid cap packing properly.

**NOTE:** Do not touch the bottom side (reference fluid side) of the reference fluid cap packing.





**WARNING**

When you troubleshoot, always wear gloves, a lab coat, and safety goggles.

If you accidentally touch a contaminant, immediately rinse the contaminated area thoroughly under running water, and then disinfect the area.

Seek medical assistance if necessary.



**IMPORTANT**

If an analyzer malfunction (error) appears before or during measurement or warnings appear in the measurement results, the measurement results may be inaccurate. Refer to the related troubleshooting pages and rerun the measurement.

## 7.1 Error Display

If an error occurs, an error message appears on the LCD.

### Example of display

**NOTE:** Some error codes may show additional information.

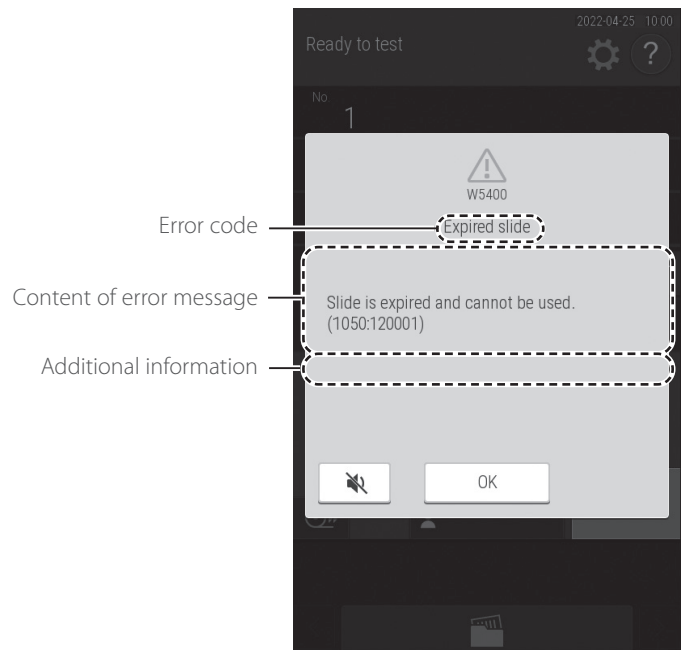
(Example)

1050 (GLU-P slide code)

120001 (Lot number)

\*Refer to Section 8.3 for slide codes.

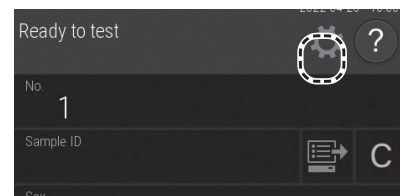
**NOTE:** The error messages listed in this document and the descriptions displayed on the LCD may differ.



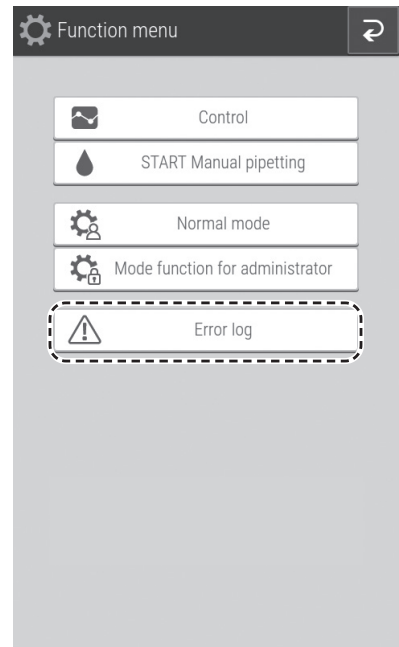
### 7.1.1 Error Log

You can view the history of errors that occurred by using ERROR LOG in the function menu.

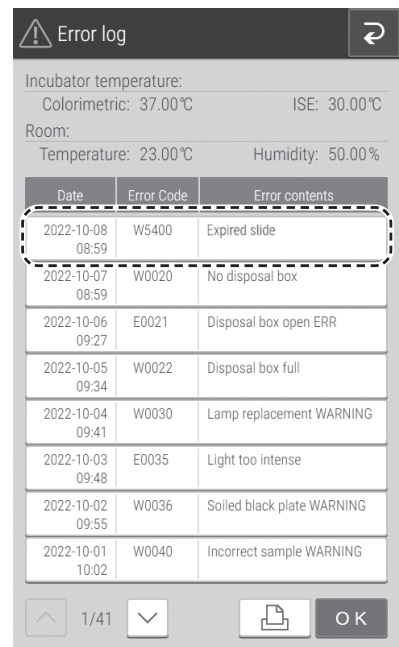
1. Touch .



- Touch ERROR LOG.  
An error log list is displayed.



- Touch an error.  
The error details are displayed.



## 7.1.2 Error Code and Reference Section Table





Error Code	Error Description	Reference Section
E0021	The disposal box was open during measurement	7.2.13
E0035	Photometric control system error	7.2.8
E0050	Light source lamp is burned out	7.2.5 (2)
E0080	Tip detection sensor error	7.2.13
E0082-E0085	Tip mounting error	7.2.4 (1)
E0086, E0087	Tip disposal error	7.2.4 (2)
E0111, E0112	Clogging error during sampling of sample	7.2.4 (5.)
E0121, E0122	Clogging error during sampling of diluent	7.2.4 (8)
E0124	Clogging error during sampling of diluted sample	7.2.4 (5.)
E0125	Clogging error during sampling of diluted sample	7.2.4 (5.)
E0127, E0128	Clogging error during sampling of reference fluid	7.2.4 (8)
E0154	Mixing cup error	7.2.4 (3)
E0160	Incorrect diluent type error	7.2.10
E0200-E0203, E0210-E0213, E0220-E0227	Slide transfer error	7.2.6
E0300, E0301, E0302	Reference white plate measurement error during initial operation	7.2.8
E0509, E0510	Signal system error inside circuit board	7.2.8
E0511	Light intensity error	7.2.5 (1)
E0515, E0516, E0517	Signal system error inside circuit board	7.2.8
E0530, E0531	ISE measurement unit (self-test) error	7.2.11 (1)
E0532, E0533, E0537, E0538	Signal system error inside circuit board	7.2.8
E0534, E0535, E0536, E0539, E0540	Signal system error inside circuit board	7.2.8
E0565	ISE temperature control error	7.2.7
E0600-E0604	Incubator motor error	7.2.6
E0700-E0703	ISE measurement unit motor error	7.2.6
E0900-E0903	Interference filter motor error	7.2.5 (3)
E1000-E1003	Sampler vertical operation error	7.2.4 (9)
E1100-E1103	Sampler rotation error	7.2.4 (9)
E1200-E1203	Syringe operation error	7.2.4 (9)
E1400-E1403	Sample application unit feed error	7.2.6
E1500, E1501, E1505	Temperature control error	7.2.7
E1502, E1503, E1504	Temperature control error	7.2.7
E1510, E1511, E1512, E1514, E1515	ISE temperature control error	7.2.7
E1520, E1521	Installation environment temperature error	7.2.7
E1530, E1531, E1532	Signal system error inside circuit board	7.2.8
E1600-E1603	Consumable disk operation error	7.2.6
E1750-E1755, E1757	Slide reading control system error	7.2.8
E3900	Signal system error inside circuit board	7.2.8

Error Code	Error Description	Reference Section
E4401, E4403	Signal system error inside circuit board	7.2.8
E4410	Measurement result reference error	7.2.8
E4411	Control chart reference error	7.2.8
E4454, E4475, E4478-E4481, E4490, E4600-E4613	Signal system error inside circuit board	7.2.8
E5101, E5102, E5103	Printer error	7.2.2 (3)
E5500	Signal system error inside circuit board	7.2.8
E5510	Slide position offset during measurement	7.2.5 (4)
E5901	Signal system error inside circuit board	7.2.8
E6200, E6201, E6210	Communication error	7.2.12 (1)
W0020	The disposal box is open	7.2.13
W0022	The disposal box is full	7.2.13
W0030	Insufficient light intensity	7.2.5 (1)
W0036	Reference black plate soiling	7.2.5 (1)
W0040	The sample type configuration and sample type of the slide do not match	7.2.10
W0042, W0043	Sample rack configuration error	7.2.10
W0060	Insufficient sample volume	7.2.4 (4)
W0070	Sampler rotation error	7.2.4 (9)
W0088, W0089, W0096	Sample tip detection error	7.2.4 (1)
W0090	The ISE slide is loaded in reverse	7.2.10
W0091, W0092	ISE measurement error	7.2.11 (3)
W0120	Sample surface cannot be detected	7.2.4 (4)
W0123, W0129	Liquid volume error	7.2.4 (7)
W0140	Liquid volume error	7.2.4 (4)
W0141-W0144	Liquid volume error	7.2.4 (7)
W0151, W0152	Mixing cup error	7.2.4 (3)
W0170	QC card has not been read	7.2.8 (2)
W0173	The slide information has not been read	7.2.3
W0175	No slides have been set	7.2.10
W0214	Slide transfer error	7.2.6
W0500-W0503	Malfunction of the internal fan	7.2.13
W0704	ISE measurement unit motor error	7.2.6
W0904	Interference filter motor error	7.2.5 (3)
W1004	Sampler vertical operation error	7.2.4 (9)
W1104	Sampler rotation error	7.2.4 (9)
W1204	Syringe operation error	7.2.4 (9)
W1404	Sample application unit feed error	7.2.6
W1604	Consumable disk operation error	7.2.6



Error Code	Error Description	Reference Section
W1700	Malfunction of the QC card reader	7.2.8 (4)
W1703	QC card read ERR	7.2.8 (4)
W4010	QC type has not been read	7.2.8 (2)
W4011	Panel card error	7.2.8 (4)
W4012	DI card error	7.2.8 (3)
W4013, W4014, W4015	QC card error	7.2.8 (4)
W4440	Setting value reset warning	7.2.13
W4460-W4477	Signal system error inside circuit board	7.2.8
W4500, W4501, W4502	Serial communication error	7.2.12 (1)
W4510	LAN communication error	7.2.12 (1)
W4511	Type 4 LAN communication error	7.2.12 (1)
W4520	Error related to work list	7.2.12 (1)
W4720	Clock time error	7.2.8
W4721, W4733	Signal system error inside circuit board	7.2.8
W5000, W5020	Signal system error inside circuit board	7.2.8
W5002-W5019	USB memory read error	7.2.8
W5050	USB memory has not been inserted	7.2.8
W5100	Printer error	7.2.2 (3)
W5110	No recording paper	7.2.2 (3)
W5330-W5332	Sample barcode reader error	7.2.12 (2)
W5400	Expired slide	7.2.10
W66xx	Input value warning	7.2.13
I5920	Reboot warning	7.2.13

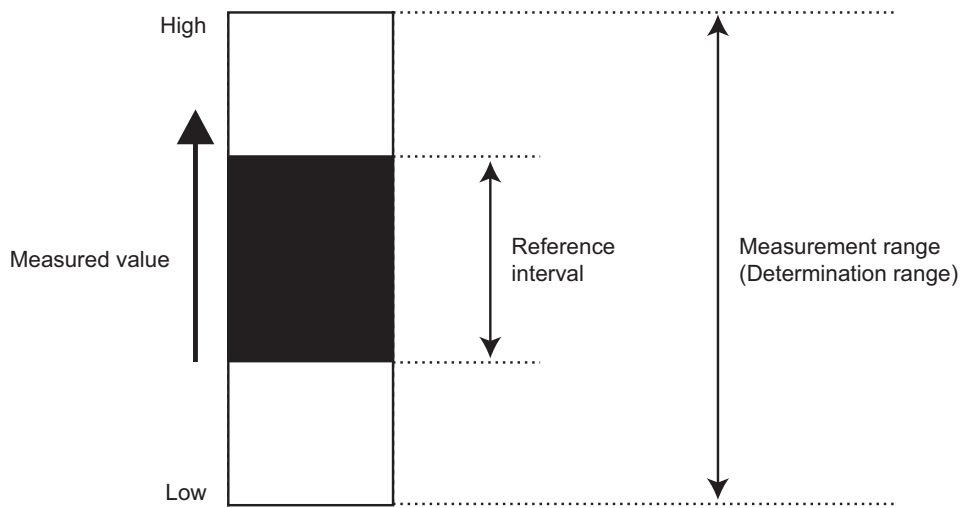
### 7.1.3 Printout Reference Table

Printout	Meaning and Conditions	Troubleshooting
H	Measurement value is higher than the upper limit of the preset reference interval.	—
L	Measurement value is lower than the lower limit of the preset reference interval.	—
>	Measurement value is higher the upper limit of the measurement range.	—
<	Measurement value is lower than the lower limit of the measurement range.	—
@	The measurement values are reference values outside the measurement range.  <b>IMPORTANT</b> Measurement values might be incorrect.	—
+ OR	Measurement value of the ISE test is higher than the upper limit of the measurement range.	Refer to Section 8.2.11
- OR	Measurement value of the ISE test is lower than the lower limit of the measurement range.	Refer to Section 8.2.11
+, -, \$	Temperature control error during measurement.	Refer to Section 8.2.11
*, ?	Light intensity is fluctuating during measurement.	Refer to Section 8.2.11
E	Unable to calculate the measurement result because measurement was interrupted due to a transfer problem or other error. The measurement results are printed as [***].	Check whether other errors have occurred, and then perform the necessary troubleshooting.
&	Abnormally high measurement value. In the case of a Ca-P slide, the sample has not been spotted.	Rerun the measurement. Perform a dilution measurement by following the slide "Instructions for Use".
#	The valid term of the slide has expired.  <b>IMPORTANT</b> Measurement values might be incorrect.  <b>IMPORTANT</b> Expired slides cannot be used. Always use valid slides.  <b>IMPORTANT</b> Analyzer will not show # whose means that ISE slides have been expired if the installed software is version 1.0. Otherwise, with the software version 1.1 or later is installed, analyzer will show # for the ISE slides that expire 2023 or later or of lot number 130000 to 139999.	
¥	Unspotted slide. Problem with sample application on the slide.	Rerun the measurement

## (Supplement) Measurement range

The measurement range (determination range) and the reference interval differ by measurement item. Their relation is shown below. For details, refer to the “Instructions for Use” of the slides.

**NOTE:** You can set the values of the reference interval by using [Reference interval range setting] in Mode function for administrator. Refer to Section 9.3.6.



## 7.2 Troubleshooting

### 7.2.1 Startup Errors

1. The analyzer does not start after the power button is pressed.

Check that the power cable is properly connected. And, turn the power switch OFF and ON again, and press the power button.

If the analyzer still does not start, please contact Heska’s Technical Support Services.

### 7.2.2 Printer or LCD Trouble

1. Printed characters are too faint or dark.

Please contact Heska’s Technical Support Services for assistance.

2. White lines appear on printed characters or certain parts of characters are missing.

The printer head has malfunctioned. Please contact Heska’s Technical Support Services for assistance.

3. Printer errors.

Error Code	Error Message	Error Condition	Troubleshooting
W5110	Printer error No paper. Set paper.	No recording paper.	Load recording paper onto the printer. Refer to Section 6.4
W5100, E5101, E5102, E5103	Printer error Contact Heska’s Technical Support Services in case the ERR repeats.	The printer is malfunctioning.	Please contact Heska’s Technical Support Services

4. LCD is too faint or dark.

Adjust the brightness using [Brightness • Volume] in Normal mode. Refer to Section 9.2.2

### 7.2.3 Slide Reading Errors

Error Code	Error Message	Error Condition	Troubleshooting
W0173	Slide identification ERR No slide information. Check the slide.	The slide information on backside of the slide could not be read correctly.	Clean the slide reader, and then rerun the measurement. Refer to Section 6.7 <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.

### 7.2.4 Sampler Errors

1. When tip cannot be mounted.

Error Code	Error Message	Error Condition	Troubleshooting
E0082, W0088	Sample tip detection ERR No tip detected. Set tips and rerun the tests from the beginning.	No tip can be detected on the sample nozzle after mounting.	The tip is not loaded correctly. Load a tip correctly, and then rerun the test from the beginning. Refer to Section 5 <b>NOTE:</b> Set tips into all holes of the tip rack after this error has occurred.
E0083, W0089	Reference fluid tip detection ERR No tip detected. Set tips and rerun the tests from the beginning.	No tip has been detected on the reference fluid nozzle after mounting.	
E0084	Sample tip clogging ERR Rerun the tests from the beginning. Contact Heska's Technical Support Services in case the ERR repeats.	A clog was detected during mounting of the sample nozzle tip.	If the error occurs again, please contact Heska's Technical Support Services for assistance.
E0085	Reference fluid tip clogging ERR Rerun the tests from the beginning. Contact Heska's Technical Support Services in case the ERR repeats.	A clog was detected during mounting of the reference fluid nozzle tip.	
W0096	No tip WARNING Tip is insufficient. Set tips and rerun the test from the beginning.	The number of tips needed for measurement is insufficient.	Load tips in all holes of the tip rack.

2. When tip cannot be ejected.

Error Code	Error Message	Error Condition	Troubleshooting
E0086	Sample tip eject ERR After analyzer shutdown, please check the disposal box. Turn the power ON.	Tips cannot be discarded.	After analyzer shutdown, empty disposal box, and then turn the power ON.
E0087	Reference fluid tip eject ERR After analyzer shutdown, please check the disposal box. Turn the power ON.		

3. When there are insufficient number of or no mixing cups.

Error Code	Error Message	Error Condition	Troubleshooting
W0151	Lack of mixing cup Lack of mixing cups. Set mixing cup and rerun the tests from the beginning.	There are not enough mixing cups.	After you replace the mixing cups, rerun from the measurement request. Refer to Section 5.3
W0152	No mixing cup Set mixing cup and rerun the tests from the beginning.		
E0154	Mixing cup detection sensor ERR Contact Heska's Technical Support Services.	Error of the mixing cup detection sensor.	If the error still occurs after switching the analyzer off and on, please contact Heska's Technical Support Services for assistance.

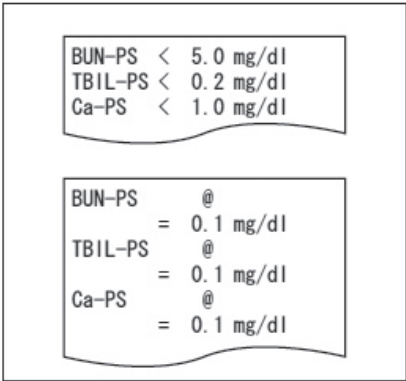
4. During a sample volume error.

Error Code	Error Message	Error Condition	Troubleshooting
W0120	Sample shortage Sample is insufficient. Check the sample.	Either the sample is not loaded or the sample volume is insufficient.	Make sure that the sample volume in the tube is within the measurable range and an appropriate sample tube is used in the sample rack, and then rerun from the measurement request. <b>NOTE:</b> If the sample volume is low, add sample to the tube or perform manual sample application.
W0060	Sample shortage Check the sample volume. Confirm the sample rack matches sample tubes being used.	There is not enough sample volume.	
W0140	Surface detection ERR (sample) Sample volume is too much. Check sample volume.	There is too much sample volume.	

5. During a sample aspiration or application error

Error Code	Error Message	Error Condition	Troubleshooting
E0111	Aspiration clogging ERR (sample) Clogging was detected during sampling. Check the sample.	Clogging was detected during sample aspiration.	The sample may contain fibrin deposits. After checking the sample, rerun from the measurement request. <b>NOTE:</b> If the error occurs again, there might be a piping system problem. Please contact Heska's Technical Support Services for assistance.
E0124	Aspiration clogging ERR (diluted sample) Clogging was detected during sampling. Check the sample and diluent.		
E0112	Spotting clogging ERR (sample) Clogging was detected during sampling. Check the sample.	A clog was detected during sample application (dispensing).	The sample may contain fibrin deposits. After checking the sample, rerun from the measurement request. <b>NOTE:</b> If the error occurs again, there might be a piping system problem. Please contact Heska's Technical Support Services for assistance.
E0125	Spotting clogging ERR (diluted sample) Clogging was detected during sampling. Check the sample and diluent.	A clog was detected during sample application (dispensing).	

6. When application is poor

Error Code	Error Message	Error Condition	Troubleshooting
Sample application problem		<p>Because the sample is not applied to the slide, the error mark [¥], [&lt;] or [@] appears continuously.</p> <p><b>!</b> <b>IMPORTANT</b> Measurement values with an [@] mark might be incorrect. Run the measurement again.</p>	<p>Check the following points.</p> <ol style="list-style-type: none"> <li>Make sure DRI-CHEM AUTO TIPS are being used.</li> <li>Make sure that tips are not being reused.</li> <li>Make sure that there are no bubbles on the sample surface in the sample tube.</li> <li>Make sure that a sample rack that matches the blood collection tube or FUJI tube is being used.</li> <li>Inspect the sampler O-ring. Refer to Section 6.6.</li> </ol> <p><b>!</b> <b>IMPORTANT</b> <b>DRI-CHEM AUTO TIPS cannot be reused.</b></p> <p><b>NOTE:</b> If errors still occur often, please contact Heska's Technical Support Services for assistance.</p>

7. During a diluent/reference fluid volume error

Error Code	Error Message	Error Condition	Troubleshooting
W0141	Surface detection ERR (diluent) Diluent volume is too much. Check the diluent volume.	There is too much diluent volume.	<p>Follow the instructions of the error code to replace the diluent or reference fluid, and then rerun from measurement request.</p> <ul style="list-style-type: none"> <li>• Diluent, refer to Section 5.4</li> <li>• Reference fluid, refer to Section 5.5</li> </ul> <p><b>NOTE:</b> Replace the diluent/reference fluid container with a new one. Do not add diluent or reference fluid.</p>
W0142	Surface detection ERR (reference fluid) Reference fluid is too much. Check the reference fluid volume.	There is too much reference fluid volume.	
W0123	Diluent is insufficient. Diluent is insufficient. Check the diluent.	There is not enough diluent.	
W0143	Diluent is insufficient. Diluent is insufficient. Check the diluent volume.		
W0129	Insufficient reference fluid Reference fluid is insufficient. Check the reference fluid.	There is not enough reference fluid.	
W0144	Insufficient reference fluid Reference fluid is insufficient. Check the reference fluid volume.		

8. During a diluent/reference fluid error

Error Code	Error Message	Error Condition	Troubleshooting
E0121	Aspiration clogging ERR (diluent) Clogging was detected during sampling. Check the diluent.	Clogging was detected during diluent aspiration.	<p>Be sure that FUJI tubes configured in Tube setting for diluent and reference fluid (Refer to Section 9.3.13) are used. If there was a loading problem, replace the diluent and reference fluid, and then rerun from the measurement request.</p> <p><b>NOTE:</b> If the error occurs again, there might be a piping system problem. Please contact Heska's Technical Support Services for assistance.</p>
E0122	Spotting clogging ERR (diluent) Clogging was detected during sampling. Check the diluent.	Clogging was detected during diluent application.	
E0127	Aspiration clogging ERR (reference fluid) Clogging was detected during sampling. Check the reference fluid.	Clogging was detected during reference fluid aspiration.	
E0128	Spotting clogging ERR (reference fluid) Clogging was detected during sampling. Check the reference fluid.	Clogging was detected during reference fluid application.	

9. During a sampler drive system error

Error Code	Error Message	Error Condition	Troubleshooting
W0070	Spotting position ERR Sampler rotation error.	Rotation error of the sampler has occurred.	<p>Turn the analyzer off after the measurement, and make sure that foreign matters such as tips and slides are not stuck or left inside of the sampler.</p> <p><b>NOTE:</b> If the error still occurs after switching the analyzer off and on, please contact Heska's Technical Support Services for assistance.</p>
E1000, E1001, E1003, W1004	Sampler up/down motor ERR Problem moving the sampler up and down. Perform inspection. Contact Heska's Technical Support Services.	Up-and-down movement error of the motor.	
E1002	Sampler up/down motor operation ERR Problem moving the sampler up and down. Perform inspection. Contact Heska's Technical Support Services.		
E1100- E1103, W1104	Sampler movement motor ERR Problem with sampler movement. Perform inspection. Contact Heska's Technical Support Services.	Rotation error of the sampler.	
E1200, E1201, E1203, W1204	Syringe motor ERR Problem with the syringe. Contact Heska's Technical Support Services.	Movement error of the syringe motor.	
E1202	Syringe motor operation ERR Problem with the syringe. Contact Heska's Technical Support Services.		




## 7.2.5 Photometric System Errors



### IMPORTANT


If a photometric system error has occurred, perform each troubleshooting step listed below and rerun the measurement.

#### 1. During a fluctuation of light source intensity

Error code	Error message	Error condition	Troubleshooting
W0036	Soiled black plate WARNING Reference black plate soiled. Clean the black plate.	The reference plate is dirty.	Switch off the analyzer and clean each part listed below. <ul style="list-style-type: none"> <li>• Clean the light source unit lens. Refer to Section 6.5</li> </ul>
W0030	Lamp replacement WARNING Low light intensity. Clean photometer.	The light intensity of the light source lamp is insufficient.	<ul style="list-style-type: none"> <li>• Clean the reference plate. Refer to Section 6.3</li> <li>• Clean the photometer. Refer to Section 6.3</li> </ul> After cleaning, switch on the power. If the errors still occur after cleaning, replace the light source lamp. Refer to Section 6.5 <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
E0511	Reference white plate ERR Contact Heska's Technical Support Services.	The light intensity is changing during measurement.	 <b>WARNING</b> The light source lamp gets very hot. Before cleaning the light source unit or replacing the light source lamp, turn off the power, wait at least 5 minutes, and then check the lamp has cooled.

Error marks " \* " or " ? " are printed on the results.

#### 2. When lamp is burned out

Error Code	Error Message	Error Condition	Troubleshooting
E0050	Lamp replacement Low light intensity. Replace the lamp.	The light source lamp is burned out.	Switch off the power and replace the light source lamp. Switch the analyzer on again after replacement. Refer to Section 6.5  <b>CAUTION</b> The light source lamp gets very hot. Before cleaning the light source unit or replacing the light source lamp, turn off the power, wait at least 5 minutes, and then check the lamp has cooled.

### 3. During an interference filter motor error

Error Code	Error Message	Error Condition	Troubleshooting
E0900, E0901, E0903, W0904	Filter motor ERR Problem with the interference filter. Contact Heska's Technical Support Services.	Movement error of the filter motor.	Switch the analyzer off and on. <b>NOTE:</b> When the error is not resolved, please contact Heska's Technical Support Services for assistance.
E0902	Filter motor operation ERR Problem with the interference filter. Contact Heska's Technical Support Services.		

### 4. Other errors

Error Code	Error Message	Error Condition	Troubleshooting
E5510	Slide slip ERR Contact Heska's Technical Support Services.	The slide stop position shifted during measurement.	Contact Heska's Technical Support Services and have the incubator pressure plate inspected.

### 7.2.6 Transfer Errors

Error Code	Error Message	Error Condition	Troubleshooting
E0200-E0203, E0220-E0227	Feed motor ERR Problem with the slide transfer system. Perform inspection. Contact Heska's Technical Support Services.	Movement error of the slide supply motor.	The sample application unit or the incubator may be dirty or the disposal box may be full of slides and tips. Switch off the analyzer, and perform the following. <ul style="list-style-type: none"> <li>• Cleaning the disposal box</li> <li>• Cleaning the incubator. refer to Section 6.3</li> <li>• Cleaning the sample application unit. Refer to Section 6.3</li> </ul> <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
E0210-E0213, W0214	Eject motor ERR Problem with the slide transfer system. Perform inspection. Contact Heska's Technical Support Services.		
E0600-E0604	Incubator motor ERR Problem with the incubator. Perform inspection. Contact Heska's Technical Support Services.	Movement error of the incubator motor of the incubator.	

Error Code	Error Message	Error Condition	Troubleshooting
E0700, E0701, E0703, W0704	Probe motor ERR Problem with ISE. Perform inspection. Contact Heska's Technical Support Services.	Movement error of the probe motor of the ISE unit.	The sample application unit or the incubator may be dirty or the disposal box may be full of slides and tips. Switch off the analyzer, and perform the following. <ul style="list-style-type: none"> <li>• Cleaning the disposal box</li> <li>• Cleaning the incubator. refer to Section 6.3</li> <li>• Cleaning the sample application unit. Refer to Section 6.3</li> </ul> <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
E0702	Probe motor operation ERR Problem with ISE. Perform inspection. Contact Heska's Technical Support Services.		
E1400-E1403, W1404	Transfer change motor ERR Problem with the slide transfer system. Contact Heska's Technical Support Services.	Movement error of the ISE transfer motor of the sample application unit.	
E1600-E1603, W1604	Consumable disk motor ERR Problem with the consumable disk. Contact Heska's Technical Support Services.	The disk motor movement error in consumable disk motor.	Turn the analyzer off after the measurement, and make sure that foreign matters such as tips and slides are not stuck or left around the consumable disk. <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.

### 7.2.7 Temperature Controller Errors



#### IMPORTANT

A measurement value with a "+" or "-" mark may not be accurate. Perform the following operation and rerun the measurement.

Error Code	Error Message	Error Condition	Troubleshooting
E0565	ISE temperature control ERR Problem with ISE. Contact Heska's Technical Support Services.	When the measurement results are appended with a "+" or "-" mark or an error listed to the left occurs, the temperature inside the incubator is outside the specified range.	Please contact Heska's Technical Support Services for assistance.

Error Code	Error Message	Error Condition	Troubleshooting
E1500	Temperature control ERR Check the ambient temperature. Clean the air filter. Reboot the analyzer.	When the measurement results are appended with a "+" or "-" mark or an error listed to the left occurs, the temperature inside the incubator is outside the specified range.	Perform the following troubleshooting. a. Check the room temperature is within 15 to 32°C. If the temperature is out of the range, control the room temperature. b. Switch off the power. c. Clean the air filter. Refer to Section 6.2 d. Make sure that thumbscrews of the incubator are tightened properly and the incubator cable is connected to the connector properly. Refer to Section 6.3 e. Make sure that the sample application unit cover is attached to the analyzer properly. Tighten the thumbscrews securely. f. Leave the analyzer for about 10 minutes to allow the interior to cool, and then switch on power. <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
E1501, E1505	Temperature control ERR Check the ambient temperature. Reboot the analyzer.		
E1510	ISE temperature control ERR Check the ambient temperature. Clean the air filter. Reboot the analyzer.		
E1511, E1515	Temperature control ERR Check the ambient temperature. Reboot the analyzer.		
E1520, E1521	Room temperature WARNING Check the ambient temperature. Reboot the analyzer.		
E1502	Temperature control ERR Incubator temperature sensor disconnected. Check the incubator cable. Contact Heska's Technical Support Services.	When the measurement results are appended with a "\$" mark or an error listed to the left occurs, the incubator cable either is not connected or has been severed.	Switch off the power and connect the incubator cable again. <b>NOTE:</b> After inserting the connector of the incubator cable, you must turn it to the right to lock it. Refer to Section 6.3 <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
E1503	Temperature control ERR Incubator temperature sensor damaged. Contact Heska's Technical Support Services.		
E1504	Temperature control ERR Incubator heater disconnected. Check the incubator cable. Contact Heska's Technical Support Services.		
E1512	ISE temperature control ERR ISE temperature control element damaged. Contact Heska's Technical Support Services.		
E1514	ISE temperature control ERR ISE heater disconnected. Contact Heska's Technical Support Services.	Disconnection error of the ISE incubator.	Please contact Heska's Technical Support Services for assistance.

## 7.2.8 Circuit Board Signal Errors

Error Code	Error Message	Error Condition	Troubleshooting
E0035	Light too intense Light too intense. Contact Heska's Technical Support Services in case the ERR repeats.	A circuit board signal error has occurred.	If the error still occurs after switching the analyzer off and on, please contact Heska's Technical Support Services for assistance.
E0300, E0301, E0302	Gain setting ERR Contact Heska's Technical Support Services in case the ERR repeats.		
E0509	AD conversion calibration ERR Contact Heska's Technical Support Services.	A circuit board signal error has occurred.	Please contact Heska's Technical Support Services for assistance.
E0510	Faulty A/D controller Contact Heska's Technical Support Services.		
E0515	DA conversion initialization ERR Contact Heska's Technical Support Services.		
E0516	AD conversion reset ERR Contact Heska's Technical Support Services.		
E0517	AD conversion initialization ERR Contact Heska's Technical Support Services.		
E0532, E0533, E0537, E0538	ISE self test AD conversion ERR For ISE measurement, turn the power SW OFF and ON. Contact Heska's Technical Support Services in case the ERR repeats. Other parameters besides ISE can be measured.		
E0534, E0535, E0536, E0539	ISE AD conversion ERR For ISE measurement, turn the power SW OFF and ON. Contact Heska's Technical Support Services in case the ERR repeats. Other parameters besides ISE can be measured.	A circuit board signal error has occurred.	When an error occurs after turning the power on and off, please contact Heska's Technical Support Services for assistance. Tests other than ISE do not require a restart.

Error Code	Error Message	Error Condition	Troubleshooting
E0540	ISE AD conversion initialization ERR For ISE measurement, turn the power SW OFF and ON. Contact Heska's Technical Support Services in case the ERR repeats. Other parameters besides ISE can be measured.	A circuit board signal error has occurred.	When an error occurs after turning the power on and off, please contact Heska's Technical Support Services for assistance. Tests other than ISE do not require a restart.
E1530, E1531, E1532	Temperature AD conversion ERR Contact Heska's Technical Support Services.		Please contact Heska's Technical Support Services for assistance.
E1750-E1755, E1757	Slide reading unit failure Contact Heska's Technical Support Services.		If the error still occurs after switching the analyzer off and on, please contact Heska's Technical Support Services for assistance.
E3900	Internal communication ERR Contact Heska's Technical Support Services.		
E4401, E4403	Save ERR Contact Heska's Technical Support Services.		
E4410	Measurement result reference error The number of measurement results, with the new result, currently exceeds capacity. The selected measurement result was deleted.	A circuit board signal error has occurred.	This measurement result cannot be referred.
E4411	Control chart reference error The selected chart is not up-to-date with the new measurement. Please go back to the parameter selection screen and display the chart again.	A circuit board signal error has occurred.	Please go back to the parameter selection screen and display the chart again.

Error Code	Error Message	Error Condition	Troubleshooting
E4454	Memory loading ERR Contact Heska's Technical Support Services.	A circuit board signal error has occurred.	Please contact Heska's Technical Support Services for assistance.
W4460 W4461 W4464 W4469 W4470 W4473 W4474	Memory recovery WARNING (Example: setting info.) Recovery performed from backup memory. Contact Heska's Technical Support Services.		
W4462 W4463	Memory recovery WARNING Recovery performed from backup memory. Check whether the setting for reference intervals is correct.		Check whether the setting for reference intervals is correct.
W4465 W4466 W4468	Memory recovery WARNING Recovery performed from backup memory. Check whether the QC card is read by confirming the lot number. If not, re-read the QC card.		Check the lot information whether the QC card has been read. If the card has not been read, read the QC card again.
E4467	Memory recovery WARNING Recovery performed from backup memory. Check whether the QC card is read by confirming the lot number. If not, contact Heska's Technical Support Services.		Check the lot information whether the QC card has been read. If the card has not been read, contact Heska's Technical Support Services for assistance.
W4471 W4472	Memory recovery WARNING Recovery performed from backup memory. Check the control fluid setting.		Check the setting for control fluids.
E4475, E4478-E4481	Memory initial-value recovery ERR Recovery performed from backup memory. Contact Heska's Technical Support Services.		Please contact Heska's Technical Support Services for assistance.

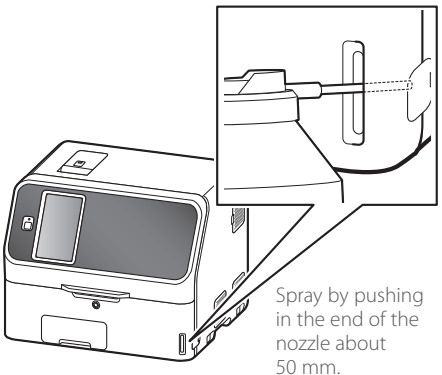
Error Code	Error Message	Error Condition	Troubleshooting
W4476	Memory recovery WARNING (IC information) Recovery performed from backup memory. Check the IC information.	A circuit board signal error has occurred.	Check the IC calibration coefficients.
W4477	Memory recovery WARNING Recovery performed from backup memory. Check the Operator ID setting.		Check the operator ID setting.
E4490	File deletion ERR Contact Heska's Technical Support Services in case the ERR repeats.		Please contact Heska's Technical Support Services for assistance.
E4600-E4613	Calculation ERR Contact Heska's Technical Support Services.		
W4720	Clock setting WARNING Set date & time. Contact Heska's Technical Support Services in case the ERR repeats.	The date and time have been reset.	Set the date and time using [Date & Time settings] in Normal mode. Refer to Section 9.2 If the error occurs again, please contact Heska's Technical Support Services for assistance.  <b>IMPORTANT</b> If the date and time are not adjusted correctly, the analyzer may fail to determine the expiration of the slides and the calibration, and the measurement results may not be accurate.
W4721	Clock control failure WARNING Set date & time. Contact Heska's Technical Support Services in case the ERR repeats.	A circuit board signal error has occurred.	Set the date and time using [Date & Time settings] in Normal mode. Refer to Section 9.2
W4733	Power switch control WARNING Contact Heska's Technical Support Services.		Please contact Heska's Technical Support Services for assistance.
W5000	USB memory read ERR Contact Heska's Technical Support Services.		



Error Code	Error Message	Error Condition	Troubleshooting
W5002- W5019	USB memory read ERR Lack of necessary files in the USB memory. Check the USB memory, and then reselect a menu. Contact Heska's Technical Support Services in case the ERR repeats. (Failed to copy files from the USB memory.)	USB memory read error has occurred.	Check and re-run the measurement according to the error message. If the error occurs again, please contact Heska's Technical Support Services for assistance.
W5020	USB memory write ERR Contact Heska's Technical Support Services.	A circuit board signal error has occurred.	Please contact Heska's Technical Support Services for assistance.
W5050	No USB memory USB memory can not be recognized.	The USB memory is not inserted.	Insert USB memory. If the error occurs again, please contact Heska's Technical Support Services for assistance.
E5500	Abnormal sample spreading on slide Contact Heska's Technical Support Services.	Signal system error inside circuit board.	When an error occurs after turning the power on and off, please contact Heska's Technical Support Services for assistance.
E5901	Software logic ERR Contact Heska's Technical Support Services.	A software error has occurred.	Please contact Heska's Technical Support Services for assistance.

### 7.2.9 QC Card and DI Card Errors

1. When data is not displayed after a QC card is read

Error Code	Error Message	Error Condition	Troubleshooting
-	-	Problem reading QC card information.	<p>Read the QC card again after making sure its correct orientation.</p> <p>If it does not improve, insert the air blow nozzle into the QR code reader slot and blow out the dust inside.</p>  <p>Spray by pushing in the end of the nozzle about 50 mm.</p>

2. When QC information has not been read

Error Code	Error Message	Error Condition	Troubleshooting
W0170	No QC card info No QC information. Read QC card.	The QC card of the slides loaded in the slide cartridge has not been read.	Read the QC card of the printed slide code.
W4010	No QC type info. No type information corresponding to the slide. Read QC card corresponding to the slide.	There is no type information for the corresponding item.	Read the corresponding QC card.

3. When a DI card has not been read

Error Code	Error Message	Error Condition	Troubleshooting
W4012	No DI info. No DI info found. Cannot read this card. Contact Heska's Technical Support Services.	There is no DI card information.	Please contact Heska's Technical Support Services for assistance.

4. Other precautions

Error Code	Error Message	Error Condition	Troubleshooting
W1700	QC card reader failure QC card reader damaged. Measurement is still possible. Contact Heska's Technical Support Services.	The card reader has malfunctioned.	Please contact Heska's Technical Support Services for assistance.
W1703	QC card read ERR Check the QC card direction and re-read it. (Insert the QR code so that it faces the far left side.) If the error occurs repeatedly, contact Heska's Technical Support Services.	QC card read error.	Make sure the card is inserted at correct orientation.
W4011	QC card ERR Cannot save data.	Panel card read error.	Please contact Heska's Technical Support Services for assistance.
W4013	QC card ERR Check whether this is the correct QC card.	A QC card data error has occurred.	Check whether the QR code of the QC card is dirty. <b>NOTE:</b> When the error is not resolved, please contact Heska's Technical Support Services for assistance.

Error Code	Error Message	Error Condition	Troubleshooting
W4014	QC card ERR Cannot read QC card for "Mode Function Underway" or "Spotting Underway". Read again after mode function ends, or after spotting ends.	The QC card cannot be read at this time.	After mode function or sample application ends, read the card again.
W4015	Expired QC card QC card has expired and cannot be used.	QC card has been expired.	Use QC cards that are before their expiration dates.

### 7.2.10 Slide Loading Errors

Error Code	Error Message	Error Condition	Troubleshooting
W0040	Incorrect sample WARNING The sample type set in analyzer does not correspond to the read sample type. Set the sample type by SAMPLE key and the slide's sample type corresponding to the sample. Rerun the tests from the beginning.	The sample type selected by the [Sample type] button and the sample type of the slide do not match. Example: <ul style="list-style-type: none"> <li>Whole blood (W) slides were loaded when either [P/S] or [U] had been selected by the [Sample type] button.</li> <li>Plasma/serum (P) slides were loaded when [W] had been selected by the [Sample type] button.</li> </ul>	Match the configuration by the [Sample type] button and the sample type to measure the slide to be used, and then rerun the measurement from the beginning.
W0042	Incorrect sample rack WARNING Correct sample rack not set in place. Check the sample rack.	A PF sample rack has been loaded for a control measurement.	Load a sample rack other than a PF sample rack.
W0043	No sample rack WARNING Sample rack is not set. Set a sample rack.	No sample rack is loaded.	Set a sample rack.
W0090	ISE slide direction ERR Incorrect loading direction of ISE slide. Check the ISE slide.	The ISE slide is loaded in reverse.	Load the ISE slide in the slide cartridge in the proper direction, and then measure again.
E0160	Incorrect diluent type error Diluent type is incorrect. Use specified diluent for the test name.	Diluent type does not match the slide to be used.	Use specified diluent for the test name, and rerun the measurement from the beginning.
W0175	No slide Slides have not been set. Rerun the tests from the beginning.	No slides are loaded in the slide cartridge.	Load slides to be tested, and rerun the tests from the beginning.

Error Code	Error Message	Error Condition	Troubleshooting
W5400	Expired slide Slide is expired and cannot be used.	The validity term of the slide has expired.	Always use valid slides. <b>IMPORTANT</b> Slide validity may not be detected in ISE tests. <b>NOTE:</b> Depending on the device settings, this warning may not be generated.

### 7.2.11 ISE Measurement Errors



#### **IMPORTANT**

ISE measurement values to which error codes have been appended (E1–E8) may not be correct. Perform the following troubleshooting and rerun the measurement.

1. When a self-test error occurred

Error Code	Error Message	Error Condition	Troubleshooting
E0530	ISE self test gain ERR For ISE measurement, turn the power SW OFF and ON. Contact Heska's Technical Support Services in case the ERR repeats. Other parameters besides ISE can be measured.	An error was detected during a self-test performed before the start of an ISE measurement.	The analyzer must be restarted for an ISE measurement. If the error occurs again, please contact Heska's Technical Support Services for assistance. Tests other than ISE do not require a restart.
E0531	ISE self test offset ERR For ISE measurement, turn the power SW OFF and ON. Contact Heska's Technical Support Services in case the ERR repeats. Other parameters besides ISE can be measured.		

2. Errors are appended to measurement results

During an ISE measurement, the checks listed in the table to the right are performed. If there is a problem with a measurement value, an error code from E1 through E8 is appended to the measurement result.

Check Menu	Description
Drift check	Checking abnormal time course (voltage) during testing
Impedance check	Checking the slide impedance after completing a test
Over range check	Checking test result is within the measurement range

Code:	Description
E1	Drift error
E2	Impedance error
E3	Outside of the measurement range (This is not an analyzer malfunction.)
E4	Drift error and impedance error
E5	Impedance error and outside of the measurement range
E6	Drift error and outside of the measurement range
E7	Drift error, impedance error, and outside of the measurement range
E8	Impossible measurement

### When the error code is not E3

The sample or reference fluid may have not been sufficiently absorbed into the slide. Perform the following troubleshooting steps.

1. Inspect the sampler O-ring. Refer to Section 6.6
2. Clean the spotting part and ISE probe unit. Refer to Section 6.3.2
3. Make sure that the analyzer can measure correctly. Refer to Section 7

**NOTE:** If the error occurs again, please contact Heska's Technical Support Services for assistance.

### When the error code is E3

There is no problem with the analyzer. The concentration of the sample is outside of the measurement range.

**NOTE:** Refer to the "Instructions for Use" of the slide for the measurement range.

### 3. Other Errors

Error Code	Error Message	Error Condition	Troubleshooting
W0091	Unacceptable ISE test ISE tests cannot run. Turn the power SW OFF and ON. Rerun the tests from the beginning.	An ISE measurement error has occurred, and ISE measurement cannot be started.	Check ISE measurement errors that occurred before this error, and then carry out the corresponding troubleshooting. After troubleshooting, turn the power of the device on and off, and then start measurement again from the beginning.
W0092	Unacceptable ISE manual pipetting ISE test cannot be done in this test mode. Set a measurable slide and redo the test from the beginning.	There was an attempt to measure an ISE slide using manual sample application measurement.	Measure an ISE slide using automatic sample application.

## 7.2.12 Errors Related to Data Communication, Sample Barcode Reader

### 1. When a communication error occurs

Error Code	Error Message	Error Condition	Troubleshooting
W4500, W4501, W4502	Serial communication ERR Check the specifications and connection of the communication cable. Contact Heska's Technical Support Services in case the ERR repeats.	Serial communication error.	Check the following: communication cable, host computer, and communication destination settings. Refer to Section 8.3 <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
W4510	LAN communication ERR Check the specification and the connection of the communication cable. Contact Heska's Technical Support Services in case the ERR repeats.	LAN communication error.	
W4511	Type 4 LAN communication ERR Check whether the setting for type 4 or host computer is correct. Contact Heska's Technical Support Services in case the ERR repeats.	Type 4 LAN communication ERR.	Check the host computer and type 4 settings. Refer to Section 8.3 <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
W4520	Incorrect work list information Check whether work list information for the host computer is correct. Contact Heska's Technical Support Services in case the ERR repeats.	The received work list information does not match specifications.	Check the work list information. <b>NOTE:</b> If the error occurs again, please contact Heska's Technical Support Services for assistance.
E6200, E6201, E6210	Communication ERR Contact Heska's Technical Support Services.	A communication error has occurred.	Please contact Heska's Technical Support Services for assistance.

### 2. Sample barcode reader error

Error Code	Error Message	Error Condition	Troubleshooting
W5330	Barcode reader not connected Check the barcode reader connection.	The sample barcode reader is not connected.	Connect the sample barcode reader to the USB connector, and then turn the analyzer off and on.
W5331	Exceeded number of characters from barcode reader The number of input characters from the bar code reader exceeded the capacity.	Barcode label error.	Check the barcode label.
W5332	Barcode WARNING Check input value and re-enter.	Barcode data error.	Check the input value and re-enter.

## 7.2.13 Other Errors

Error Code	Error Message	Error Condition	Troubleshooting
W0020	No disposal box Put Disposal box to the end and then press START key.	Measurement was started with the disposal box pulled out.	Insert the disposal box completely, and then start measurement.
E0021	Disposal box open ERR Disposal box opened during measurement. Close Disposal box and run the tests from the beginning.	The disposal box was open during measurement.	Close the disposal box, and then start measurement again from the beginning.
W0022	Disposal box full Disposal box became full of slides and tips. Discard slides and tips to empty the box when measurement is not in progress.	The disposal box is full of slides and tips.	While a measurement is not being performed, discard the slides and tips in the disposal box. <b>NOTE:</b> When there are 150 slides or 75 tips in the disposal box, this error occurs. If the disposal box is pulled out, it is determined that the slides and tips were discarded, and the disposal count is reset. Always empty the disposal box after pulling it out.
E0080	Sample tip sensor ERR Contact Heska's Technical Support Services.	Malfunction of the sample tip sensor.	Please contact Heska's Technical Support Services for assistance.
W0500	Rear fan 1 stop Contact Heska's Technical Support Services.	A fan error has occurred.	Please contact Heska's Technical Support Services for assistance.
W0501	Rear fan 2 stop Contact Heska's Technical Support Services.		
W0502	Intake fan stop Contact Heska's Technical Support Services.		
W0503	Exhaust fan stop Contact Heska's Technical Support Services.	A fan error has occurred.	Please contact Heska's Technical Support Services for assistance.
I5920	Turn the power ON 30 days or more have passed from when the analyzer was started. For stable system performance, turn the power ON.	A long time has passed since start-up.	Switch the analyzer off and on.
W4440	Setting value reset WARNING The reference interval range setting, control fluid setting, and correlation coefficients have been reset. Check the settings.	The settings have been reset.	Check settings for the reference interval range and the control fluid, and check correlation coefficients.

Error Code	Error Message	Error Condition	Troubleshooting
W66xx	Input value ERR Check input value and re-enter.	The entered value is incorrect.	Check the entered value and enter it again.

### 7.3 Slide Code Table

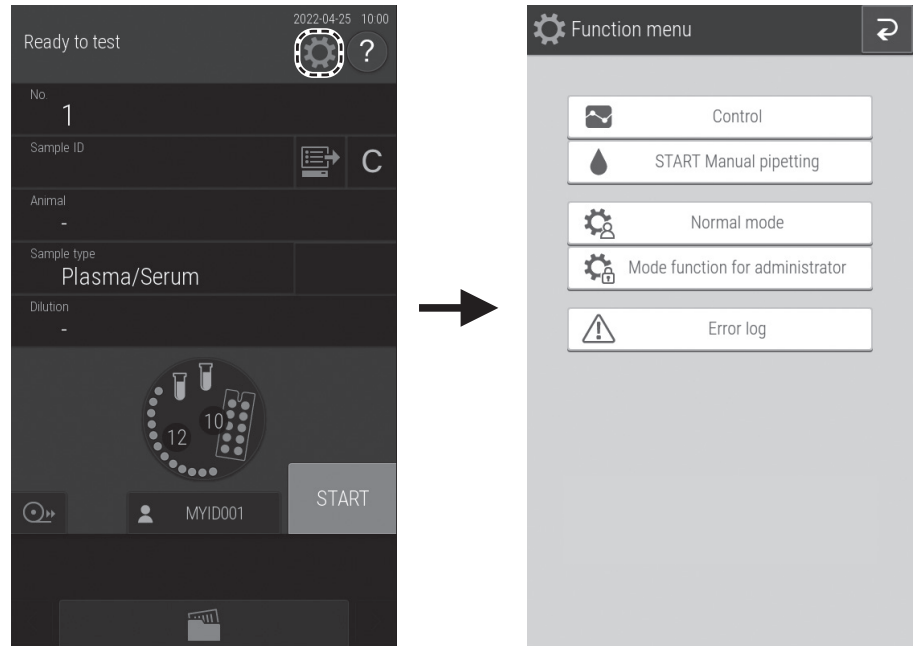
Test		Slide code		Test		Slide code	
		Test code	Sample code			Test code	Sample code
GLU	-P	10	50	GGT	-P	30	50
BUN	-P	11	50	GOT/AST	-P	31	50
UA	-P	13	50	GPT/ALT	-P	32	50
TCHO	-P	14	50	CPK	-P	33	50
NH <sub>3</sub>	-P	15	50	LDH	-P	34	50
TG	-P	16	50	ALP	-P	35	50
CRE	-P	17	50	v-AMY	-P	43	50
TP	-P	18	50	v-LIP	-P	44	50
ALB	-P	20	50	TCO <sub>2</sub>	-P	45	50
TBIL	-P	21	50	Na		91	00
Ca	-P	23	50	K		92	00
IP	-P	24	50	Cl		93	00
Mg	-P	28	50				

Check the slide code printed on the slide box.

**NOTE:** Slide codes are subject to change without notice.



If the  (Function menu) button is touched, the Function menu screen appears.



Function menu list

Function Menu Items	Settings	Advanced Settings	Reference Section
Control	—	—	8.1
START Manual pipetting	—	—	4.1
Normal mode	Date & Time settings	—	8.2.1
	Brightness • Volume	Display brightness	8.2.2
		Error sound	
		Other general sound	
	Lamp management	Lamp ON time	9.2.3
		Lamp off timer setting	
	Lot information	—	8.2.4
	Sampler leak check	Sample nozzle	6.6.2
		Reference fluid nozzle	
	Replace O-ring	—	6.6.3
Reference plate level check	—	8.2.2	
Cleaning mode	—	8.3.13	

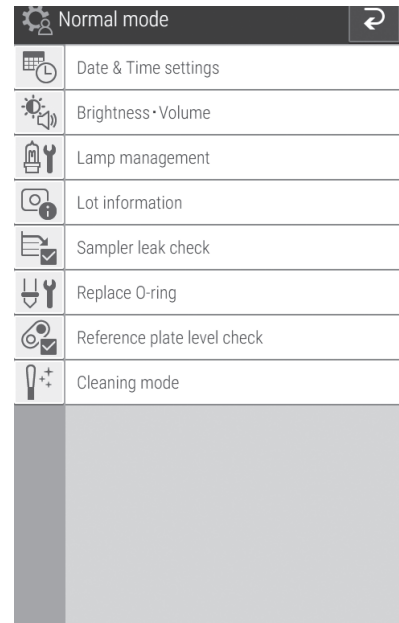
Function Menu Items	Settings	Advanced Settings	Reference Section
Mode function for administrator	Language setting	—	8.3.1
	Host connection setting	None	8.3.2
		Serial connection	
		LAN connection	
	Calculated Parameter	—	8.3.3
	Unit conversion	—	8.3.4
	Switch measurement range display	—	8.3.5
	Reference interval range setting	—	8.3.6
	Sample No. /ID settings	—	8.3.7
	Work list selection setting	Sample ID / Patient name	8.3.8
		Patient ID / Patient name	
	Correlation coefficients	—	8.3.9
	Lot compensation coefficients	—	8.3.10
	IC calibration coefficients	—	8.3.11
	Dilution setting	—	8.3.12
	Tube setting for diluent & reference fluid	Diluent	8.3.13
		Reference fluid	
	Print setting for measured result	Number of printing sheets	8.3.14
		Print order	
		Print with the ranges	
	Control fluid setting	—	8.3.15
	Control measurement setting	—	8.3.16
	Operator ID setting	—	8.3.17
Test item name setting	Display and printout	8.3.18	
	Data transmission		
Default sample type setting	—	8.3.19	
Error log	—	—	7.8.1.2

## 8.1 Control

This mode is not used for Heska Chemistry Control. If Control mode is entered accidentally, cycle power to cancel control mode.

## 8.2 Normal Mode

General operators use this function menu to, for example, set the time and configure the brightness of the LCD.

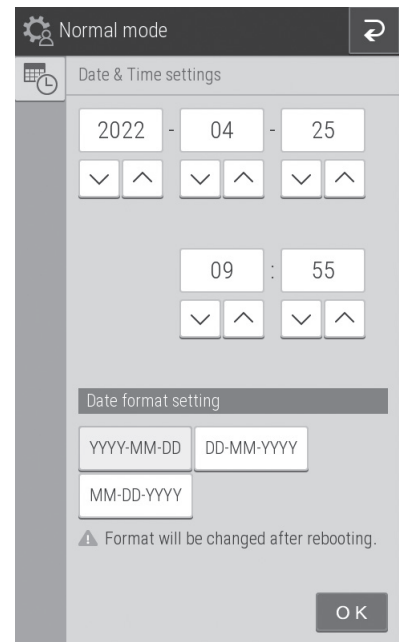


### 8.2.1 Date & Time Settings


This mode is used to set the date and time settings stored in the memory

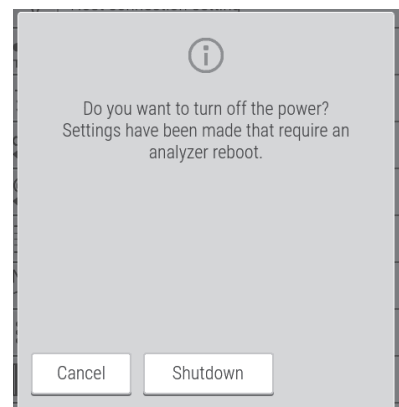
Touch "↓" or "↑" to change the date and time values.

Configure the order of the year, month, and date by using [Date format setting].




**NOTE:** The analyzer must be restarted to enable a change of [Date format setting].



The confirmation dialog for the power-off will appear when  is touched to exit Normal mode. After the shutdown, reboot the analyzer.






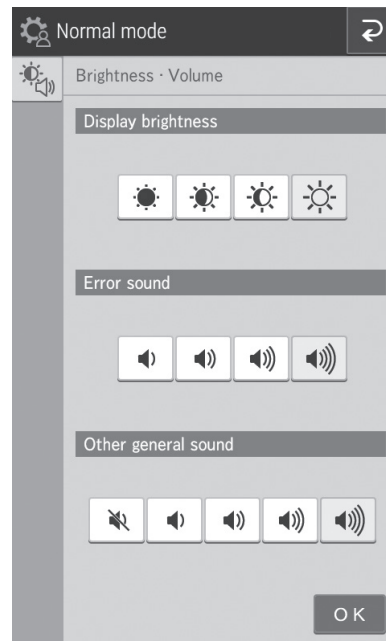
## 8.2.2 Brightness • Volume

You can configure the brightness of the LCD and buzzer sounds (error warning, measurement completed).

Configure the brightness of the LCD using [Display brightness]. Use  and  to set the minimum and maximum brightness.

Configure the buzzer sound when an error occurs by using [Error sound]. Use  and  to set the minimum and maximum.

Configure the buzzer sound when measurement ends by using [Other general sound]. Use  and  to set the minimum and maximum. If  is configured, the buzzer is muted.



## 8.2.3 Lamp Management

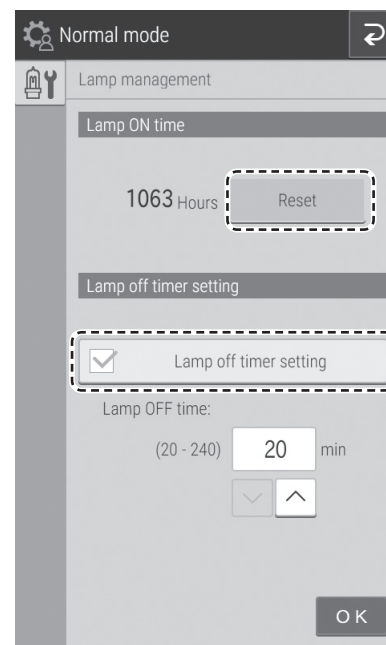
Display and reset the cumulative illumination time of the lamp currently installed in the analyzer. Furthermore, choose whether to turn off the lamp automatically when the analyzer has not been used for some time.

You can check the cumulative illumination time by using [Lamp ON time]. If the [Reset] button is touched, the cumulative illumination time is reset.

**NOTE:** Reset the cumulative illumination time of the lamp after replacing the lamp.



If the [Lamp off timer setting] checkbox is selected, the lamp is switched off automatically after some time. You can configure the time until the lamp is switched off.

**NOTE:** The default setting is 20 minutes.



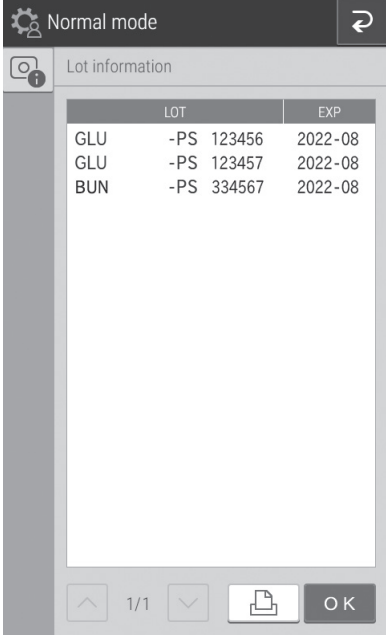
### 8.2.4 Lot Information

The screen displays the lot information of currently registered QC cards. You can also print all currently registered lot information.

When there are two or more pages that can be displayed, touch  and  to scroll the pages.

If  is touched, all currently registered lot information is printed.

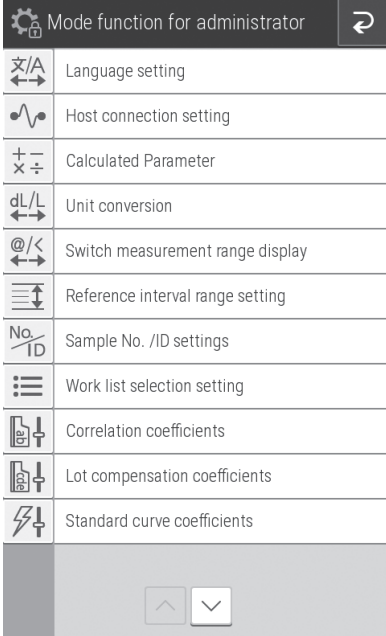
**NOTE:** Up to five lots are registered for one test.














	LOT	EXP
GLU	-PS 123456	2022-08
GLU	-PS 123457	2022-08
BUN	-PS 334567	2022-08

### 8.3 Mode Function for Administrator

**NOTE:** To display **Mode function for administrator**, open the Function menu page, touch the [Mode function for administrator] button, and then enter the password.




	Language setting
	Host connection setting
	Calculated Parameter
	Unit conversion
	Switch measurement range display
	Reference interval range setting
	Sample No. /ID settings
	Work list selection setting
	Correlation coefficients
	Lot compensation coefficients
	Standard curve coefficients

### 8.3.1 Language Setting

Configure the language to be used.

Touch the button of language to be configured.

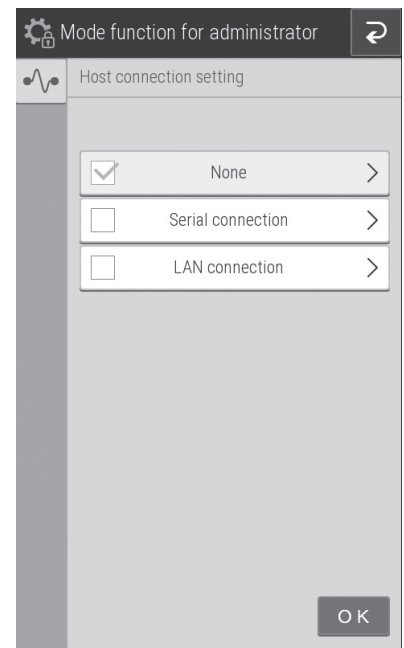
**NOTE:** Rebooting the device is necessary for the setting to take effect. **The confirmation dialog for the power-off will appear when**  **is touched to exit Mode function for administrator. After the shutdown, reboot the analyzer.**



### 8.3.2 Host Connection Setting


Configure the connection terminal and communication parameters to connect to the host computer (PC). Furthermore, switch the built-in printer on or off.

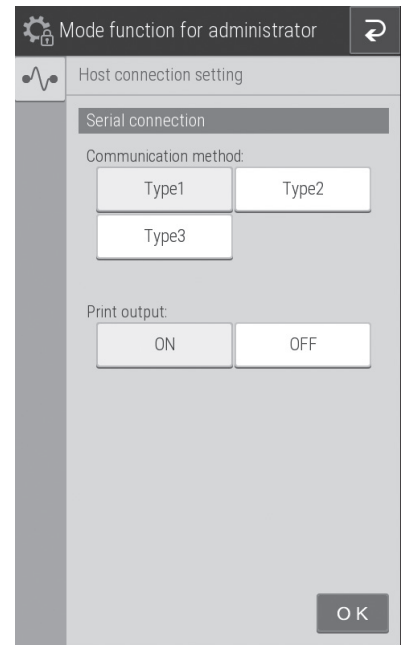
When you will not connect to a host computer, set NONE.



If [Serial connection] is set, configure the communication type and whether to output from the printer. You can choose from 3 communication types.

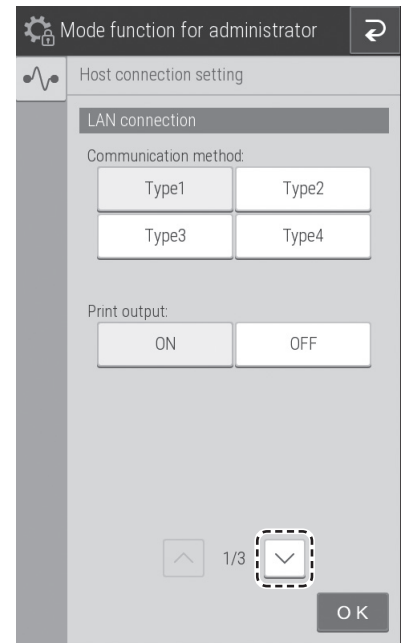
- Type 1: Bidirectional connection
- Type 2: Unidirectional connection (bidirectional format)
- Type 3: Unidirectional connection (standard format)


**NOTE:** Rebooting the device is necessary for the setting to take effect. The confirmation dialog for the power-off will appear when  is touched to exit Mode function for administrator. After the shutdown, reboot the analyzer.



If [LAN connection] is set, configure the communication type and whether to output from the printer. You can choose from 4 communication types.

- Type 1: Bidirectional connection
- Type 2: Unidirectional connection (bidirectional format)
- Type 3: Unidirectional connection (standard format)
- Type 4: Unidirectional connection (HL7 formatted)



When  was touched, the LAN configuration screen appears. If an entry field is touched, the software keyboard (refer to [Section 2.3](#)) appears so you can edit the value.


**NOTE:** The following section shows the default LAN settings.

#### Element Element DCX Analyzer settings

IP address:192.168.100.1  
Subnet mask:255.255.255.0  
Port number:65535  
Gateway: 0.0.0.0


#### PC settings

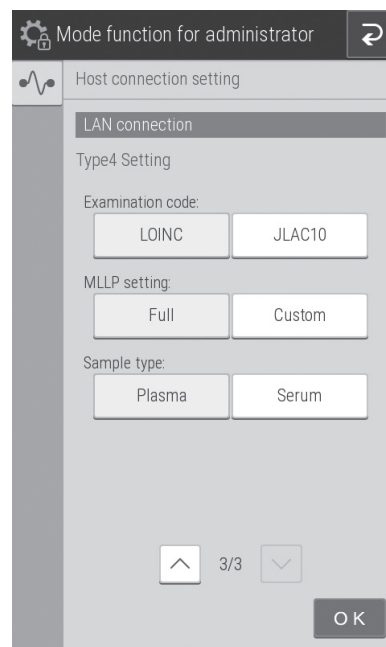
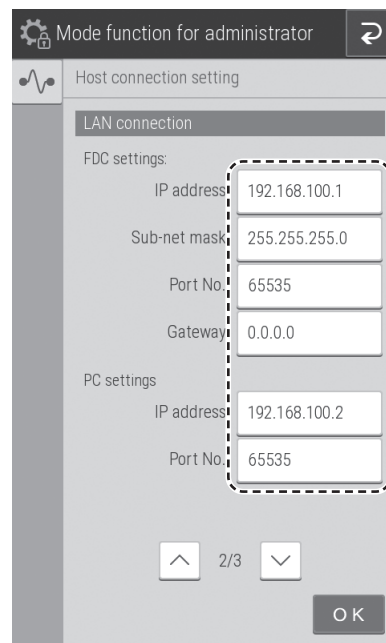
IP address:192.168.100.2  
Port number:65535

**NOTE:** Rebooting the device is necessary for the setting to take effect. The confirmation dialog for the power-off will appear when  is touched to exit Mode function for administrator. After the shutdown, reboot the analyzer.

1. Touch EXAMINATION CODE to select the standard for examination item classification code to be used in communication.
2. Touch MLLP setting to set MLLP (Minimal Lower Layer Protocol) in communication.  
Full: MLLP is applied to full message in communication.  
Custom: MLLP is applied to only at the end of message in communication.

Touch SAMPLE TYPE to select the sample type used in communication.

**NOTE:** Rebooting the device is necessary for the setting to take effect. The confirmation dialog for the power-off will appear when  is touched to exit Mode function for administrator. After the shutdown, reboot the analyzer.





### 8.3.3 Calculated Parameter

You can configure the settings to calculate the following items from simultaneously measured values and then display the results. Items registered for calculation have their measurement results displayed and printed.

Test Name	Calculation Test Name	Unit	Calculation Formula
Globulin	GLOB	g/dL or g/L	$GLOB = TP \text{ value} - ALB \text{ value}$
Albumin/Globulin ratio	ALB/GLOB	—	$ALB/GLOB = ALB \text{ value} / (TP \text{ value} - ALB \text{ value})$
BUN/Creatinine ratio	BUN/CRE	mg/mg or (SI)	$BUN/CRE = BUN \text{ value}/CRE \text{ value [mg/mg]}$ $BUN/CRE = BUN \text{ value} \times 1,000/CRE \text{ value}[(SI)]$ NOTE: BUN measured value in SI unit (mmol/L) is shown as molar concentration of Urea. BUN/CRE ratio in SI unit (molar ratio) is shown Urea concentration/creatinine concentration ratio.
GOT/GPT ratio (AST/ALT ratio)	GOT/GPT (AST/ALT)	—	$GOT/GPT = GOT \text{ value} / GPT \text{ value}$ $(AST/ALT = AST \text{ value} / ALT \text{ value})$ NOTE: The calculation test name can be changed by [Test item name setting] in the Mode function for administrator. Refer to Section 9.3.18.
Sodium/Potassium ratio	Na/K	—	$Na/K = Na \text{ value}/K \text{ value}$
Anion Gap	Anion Gap	mEq/L or mmol/L	$Anion \text{ Gap} = Na \text{ value} - (Cl \text{ value} + TCO_2 \text{ value})$



#### IMPORTANT

Calculation items display a value calculated from simultaneously measured values. Therefore, calculation results are impacted by errors included in measurement values and the effects of interfering materials. Please understand that when you use the results for a diagnosis, you must make an overall determination in combination with the measurement values is used in the calculation.

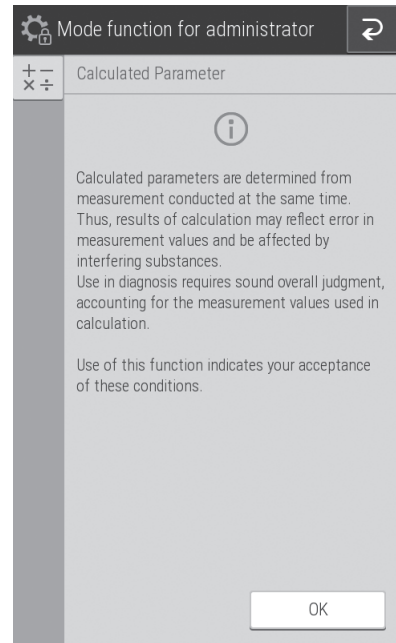
**NOTE:** In the case of additional testing and retesting, items subject to calculation must be measured at the same time.

**NOTE:** When there are two or more slides of the same item subject to calculation in the slides measured at the same time, the initial measurement value is used.

**NOTE:** When the measurement results of items subject to calculation exceed the measurement range (determination range), the calculation results of this calculation item are displayed and printed as "\*\*\*\*".

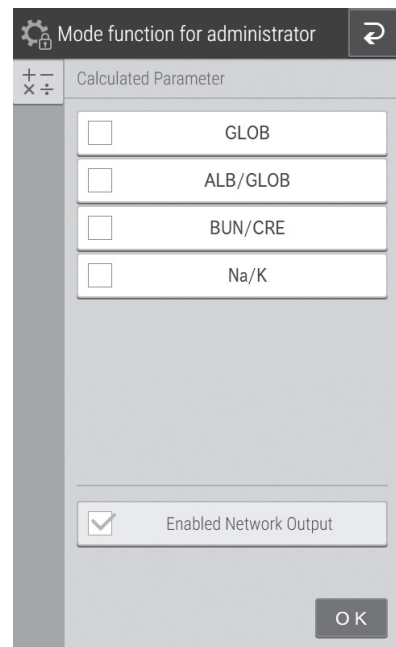
**NOTE:** When an item subject to calculation has expired, an (expiry) warning symbol (#) is displayed and printed for the measurement results of this item and the calculation results.

If CALCULATED PARAMETER is touched in Mode function for administrator, precautions for use of calculation items are displayed. To use calculation items after confirming the precautions, touch OK.



Configure the calculation items to be used.

**NOTE:** If the QC card of an item to be used for calculation has not been read, the calculation item is not displayed.



### 8.3.4 Unit Conversion

Configure the main unit and secondary unit for each measurement item. The following table shows the units that can be used for each configuration item and the conversion coefficient.

Test	Test Code	Unit (A)	Unit (B)	Conversion Coefficient	Test	Test Code	Unit (A)	Unit (B)	Conversion Coefficient
GLU	10	mg/dL	mmol/L	0.05551	GGT	30	U/L	μkat/L	0.0167
BUN	11	mg/dL	mmol/L	0.357	GOT/ AST	31	U/L	μkat/L	0.0167
UA	13	mg/dL	μmol/L	59.48	GPT/ ALT	32	U/L	μkat/L	0.0167
TCHO	14	mg/dL	mmol/L	0.02586	CPK	33	U/L	μkat/L	0.0167
NH <sub>3</sub>	15	μg/dL	μmol/L	0.7139	LDH	34	U/L	μkat/L	0.0167
TG	16	mg/dL	mmol/L	0.01129	ALP	35	U/L	μkat/L	0.0167
CRE	17	mg/dL	μmol/L	88.4	v-AMY	43	U/L	μkat/L	0.0167
TP	18	g/dL	g/L	10	v-LIP	44	U/L	μkat/L	0.0167
ALB	20	g/dL	g/L	10	TCO <sub>2</sub>	45	mmol/L	mmol/L	1
TBIL	21	mg/dL	μmol/L	17.1	Na	91	mEq/L	mmol/L	1
Ca	23	mg/dL	mmol/L	0.25	K	92	mEq/L	mmol/L	1
IP	24	mg/dL	mmol/L	0.3228	Cl	93	mEq/L	mmol/L	1
Mg	28	mg/dL	mmol/L	0.4114					

**NOTE:** Unit (B)= Unit (A)× Conversion coefficient

**NOTE:** BUN measured value in Unit (B) (mmol/l) is shown as molar concentration of Urea.

1. Touch the unit button to be used for each measurement item.

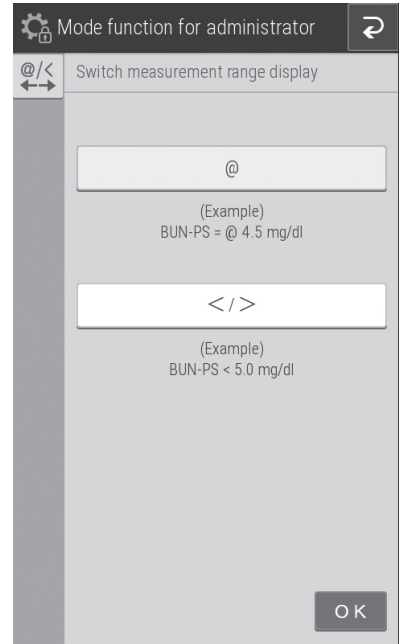


Next-page buttons

### 8.3.5 Switch Measurement Range Display

Switch the display method for data outside the measurement range (passing the upper/lower limit of the determination range) for all tests.

- If [ @ ] is configured, an [ @ ] symbol is added to indicate the displayed measurement value is outside the measurement range.
- If [ < / > ] is configured, a value outside the measurement range is displayed by a [ < ] or [ > ] symbol.

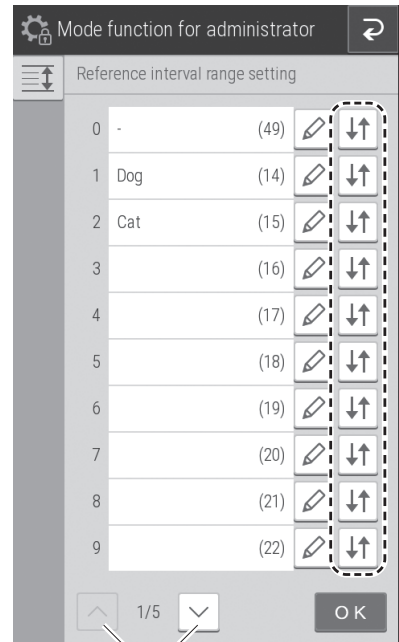


### 8.3.6 Reference Interval Range Setting

You can add, edit, and change the order of the reference interval names that can be selected when registering sample information. Refer to Section 3.3. Furthermore, you can set a reference interval for each sample type ([P/S, W] or [U]) of a reference interval name.

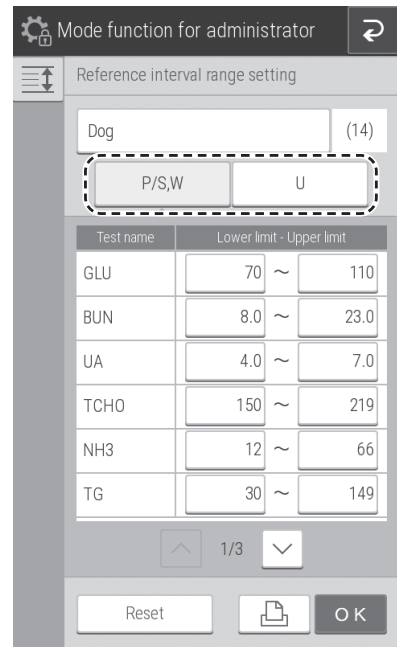
#### Adding and editing of reference interval names

1. Touch  of the item you want to edit or add.




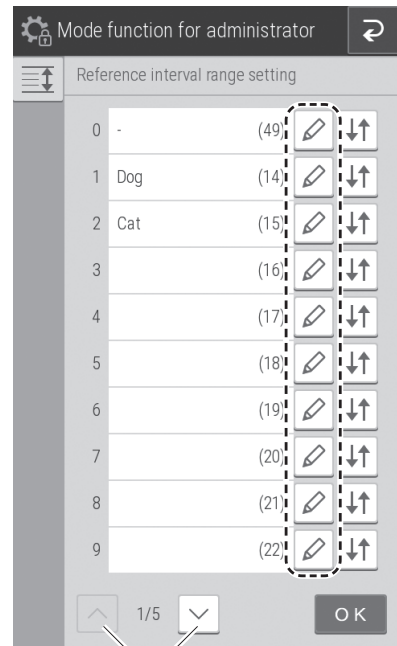
Next-page buttons

- If an entry field is touched, the software keyboard (refer to Section 2.3) appears so you can edit the test name and other details. To change the sample type when configuring the reference interval, touch the [P/S,W] button or [U] button.



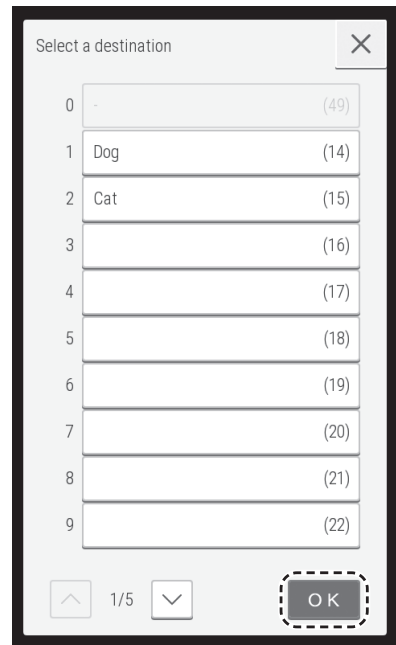
### Changing the display order

- Touch  of the test for which you want to change the display order.



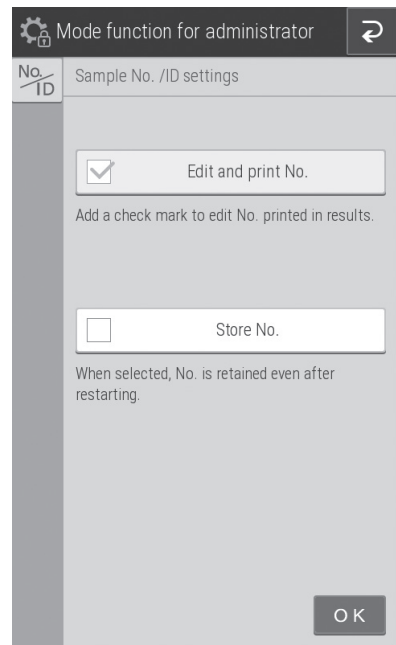
Next-page buttons

2. Touch the test field for which you want to configure the transfer destination, and then touch OK.



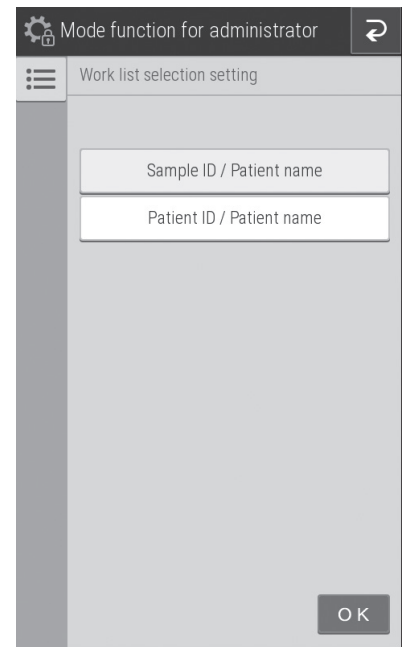
### 8.3.7 Sample No. /ID Settings

1. Configure whether to display the sample number in the measurement results under [Edit and print No.].
2. Configure whether to record the sequence number of the analyzer under [Store No.].



### 8.3.8 Work List Selection Setting

1. Configure whether to display the sample ID or patient ID at the Work list index screen.



### 8.3.9 Correlation Coefficients

1. Enter, reset, or print the correlation coefficients for each sample type ([P/S,W] or [U]). For details, refer to "Description of the correlation function" at the end of the document.

**!** IMPORTANT

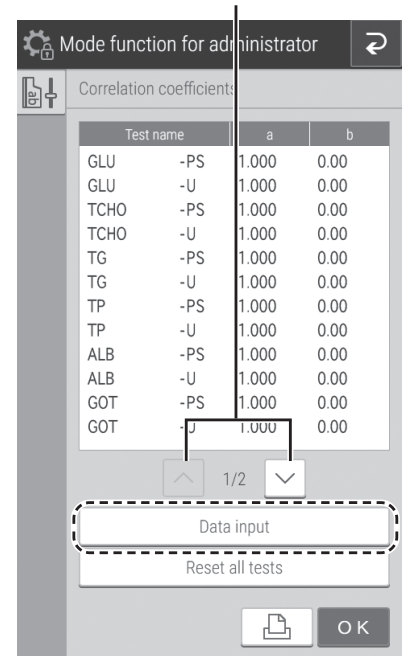
**Incorrect entry of "a" and "b" causes incorrect measurement results. Always make sure that the entries (a, b) are correct.**

1. Touch DATA INPUT.

**NOTE:** If  is touched, all correlation coefficient settings are printed.

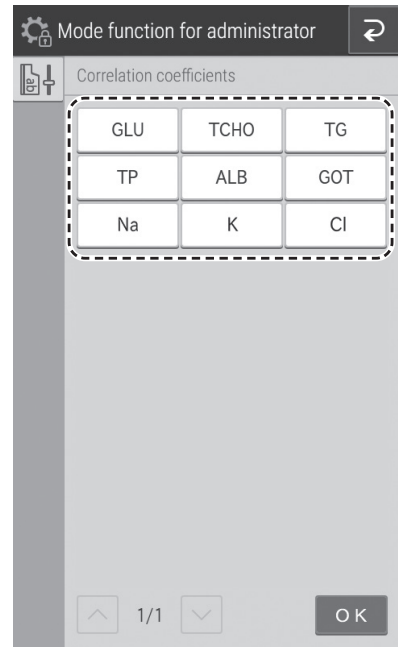
**NOTE:** If RESET ALL TESTS is touched, a reset confirmation screen appears. To reset the correlation coefficients of all measurement items, touch OK. To cancel the reset, touch CANCEL.

Next-page buttons



2. Touch measurement of item you want to edit.

**NOTE:** Only measurement items for which QC cards have been read are displayed. If the [Input] field of an item is touched, the software keyboard appears so you can enter the value. Refer to Section 2.3

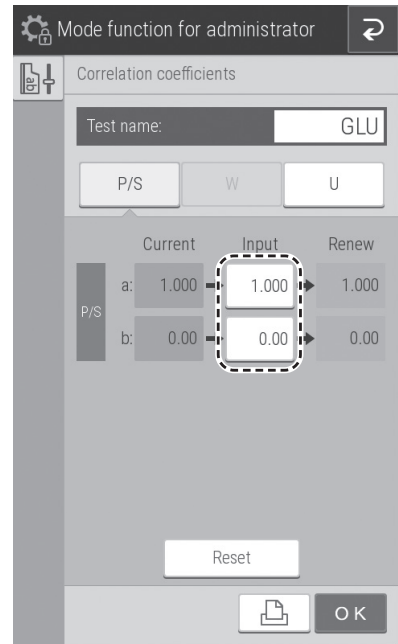


If the INPUT field of an item is touched, the software keyboard appears so you can enter the value. Refer to Section 2.3

To change the sample type, touch [P/S], [W], or [U].

**NOTE:** If RESET is touched, a reset confirmation screen appears. To reset the displayed correlation coefficients for the sample type of the selected measurement item, touch OK. To cancel the reset, touch CANCEL.

**NOTE:** If values are entered for "a" and "b" when values have already been entered, the current values are not discarded, and corrections are also applied. For details, refer to following "Description of the correlation function".



**!** IMPORTANT

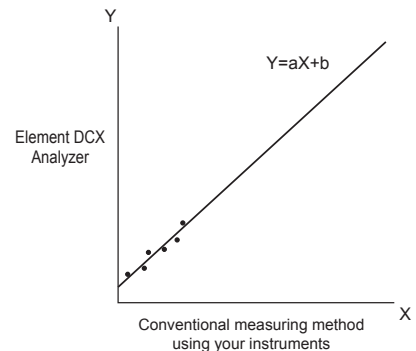
**Description of the correlation function**

This function is designed to determine the correlation between the measured data obtained using the Element DCX Analyzer and the data obtained using the conventional measuring method with your own instruments.

The X-axis shows the measured data obtained using your instruments, and the Y-axis shows the measured data obtained using the Element DCX Analyzer. The correlation regression equation in this case is:

$$Y = aX + b$$

After values for the two coefficients (a, b) are registered in the analyzer memory, the Element DCX Analyzer performs compensation calculations internally using the formula:  $X = (Y-b)/a$ . In this way, measured data obtained using the Element DCX Analyzer are adjusted to match measured data that would be obtained using your instruments.





## Method

In order to obtain a better correlation, it is essential to exercise caution regarding the amount of data and the sample.

1. You can configure a and b values by sample type.
2. The correlation function is independent of other compensation functions.
3. If values for (a, b) have already been input, old values will not be canceled as follows. If the old values are represented as (a1, b1), and the new values as (a2, b2), the resulting values for (a, b) will be determined according to the following formulas:

$$a=a1 \times a2$$

$$b=a1 \times b2 + b1$$

4. Depending on the values input for (a, b), the apparent limits of the measurement range will shift as follows.

### Example of GLU measurements

If  $a=1$  and  $b=0$  ( $Y=X$ ), the measurement range is 10 to 600 mg/dl. But by inputting regression coefficients as shown, the lower limit changes to A and the upper limit to B.

If the regression formula is  $Y = 0.98X + 5$ :

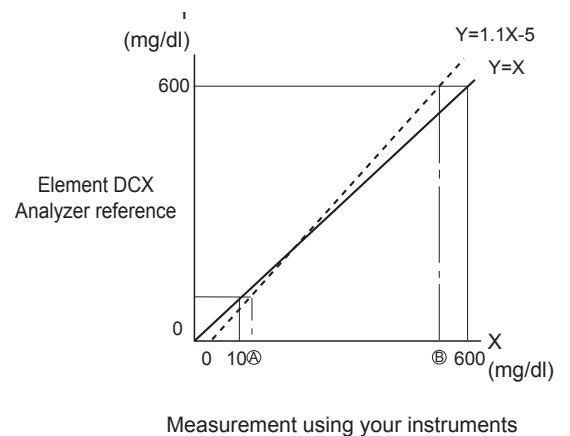
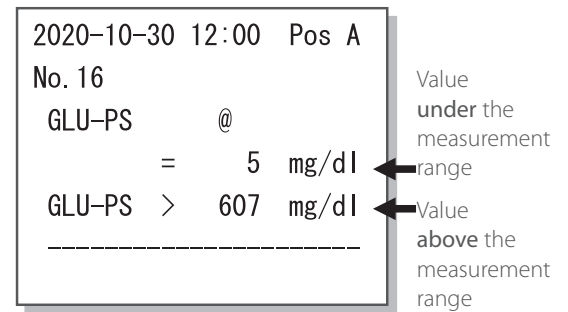
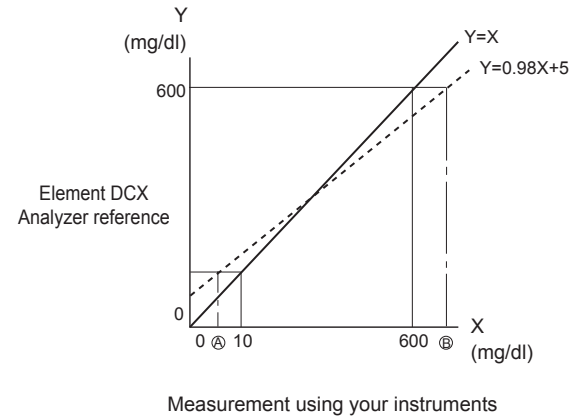
$$A = 5 \text{ mg/dl}$$

$$B = 607 \text{ mg/dl}$$

If the regression formula is  $Y = 1.1X - 5$ :

$$A = 14 \text{ mg/dl}$$

$$B = 550 \text{ mg/dl}$$

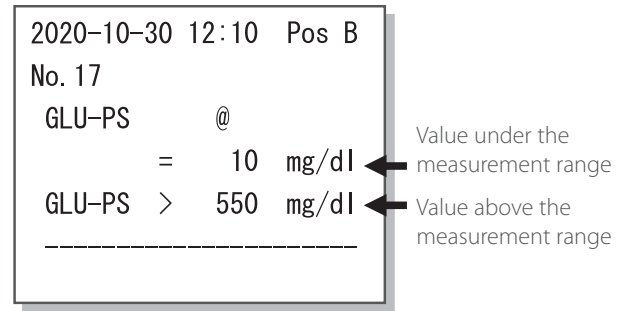


If the measured data is below the measurement range, an "@" mark is added as shown in the example printout.

If the measured data is above the measurement range, a ">" sign is printed as shown in the example printout.

**!** IMPORTANT

Reported values with "@" marks may not be accurate. Run the measurement again.



### 8.3.10 Lot Compensation Coefficients

Enter the lot compensation coefficients (c, d, and e) printed on the QC cards of slides. This mode is needed if it is not possible to read the data directly because the QC card was lost or spoiled. It is only possible to enter coefficients for boxes of individual slides. This isn't possible on any panels.

**!** IMPORTANT

Incorrect inputs for (c, d, and e) will cause incorrect measurement results.

Make sure that the inputs for (c, d, and e) are correct using this mode.

**!** IMPORTANT

When the slide type number was changed, even if the new values (c, d, and e) are entered by using this setting, the new standard curve information will not be updated. It is necessary to read the QC card when the slide type number was changed.

The slide type number is the most significant digit of a lot number.

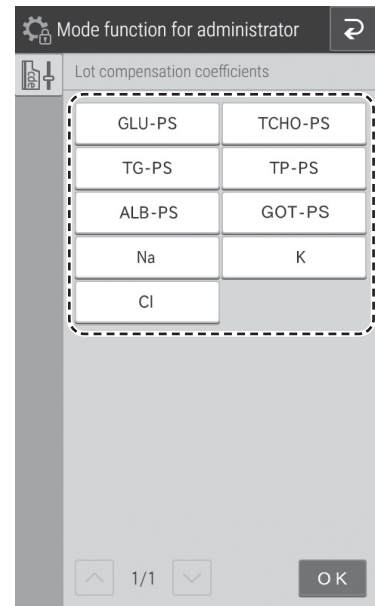
(Example) The slide type number of "Lot No.123456" is 1.

1. Touch "Measurement item-sample type" button that you want to edit.


**NOTE:** Only "Measurement item-sample type" items that have been read from QC cards are displayed as buttons.

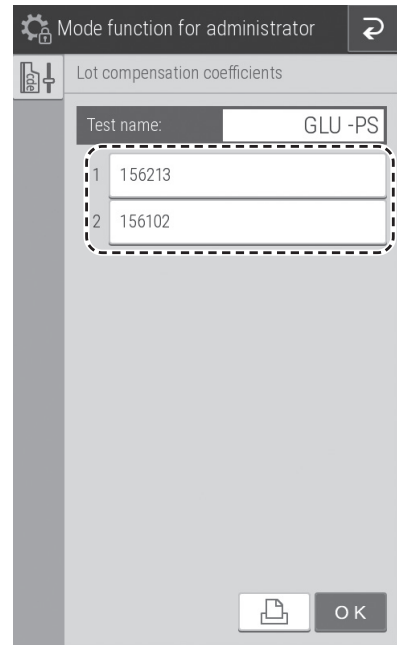
**NOTE:** Immuno-chemical items are not displayed.

**NOTE:** Measurement items are displayed in ascending order of test code, and sample type is displayed in the following order: [PS] and [W].



2. Touch the Lot No. for which you want to enter a lot compensation coefficient.


**NOTE:** If  is touched, all lot compensation coefficient settings are printed.



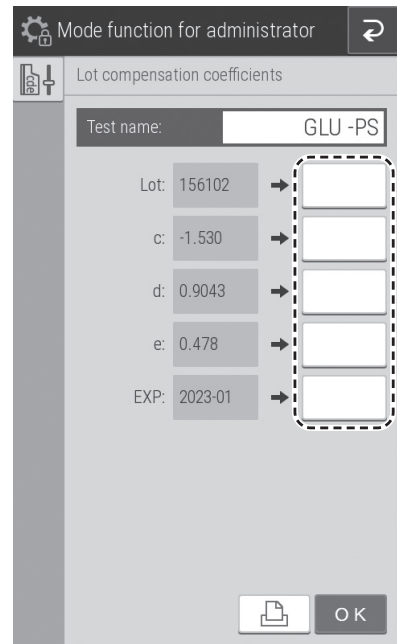
3. If the [Input] field of an item is touched, the software keyboard appears so you can enter the value. Refer to Section 2.3

**NOTE:** The most significant digit of a [Lot] number (the type number) is fixed. Enter from the second digit.

**NOTE:** Incorrect entries will cause incorrect measurement results. Always make sure that the displayed values are correct.


**NOTE:** If  is touched, all lot compensation coefficient settings are printed.

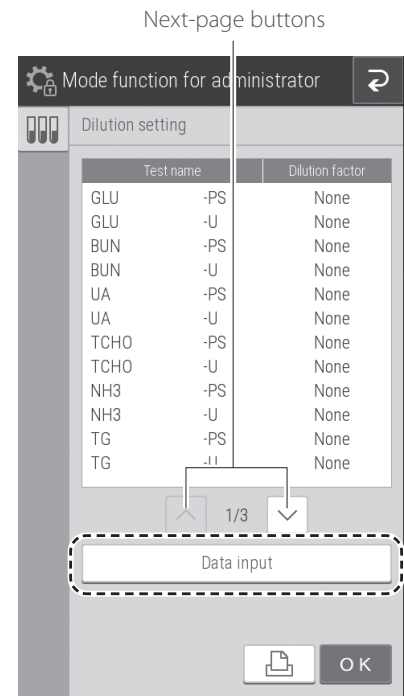
**NOTE:** For the expiration date for use (EXP), enter xxxx-xx (four digits for the year and two digits for the month). Also enter the hyphen (-).



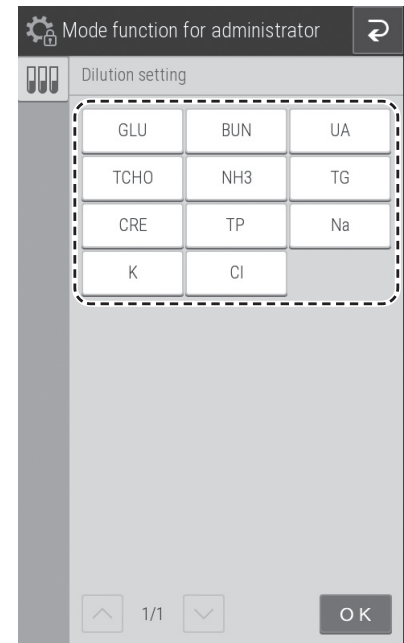
### 8.3.11 Dilution Setting

1. Touch DATA INPUT.

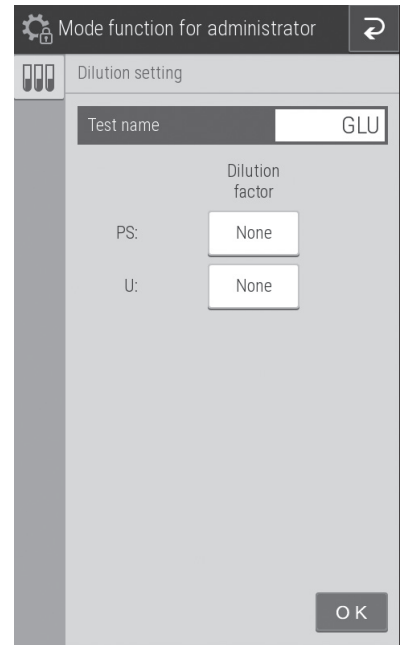
**NOTE:** When  is touched, all dilution factor settings will be printed.



2. Touch the measurement item button to be edited.



- For the dilution factor, touch a button, and then select from [None], [2], [3], [4], [5], or [10].

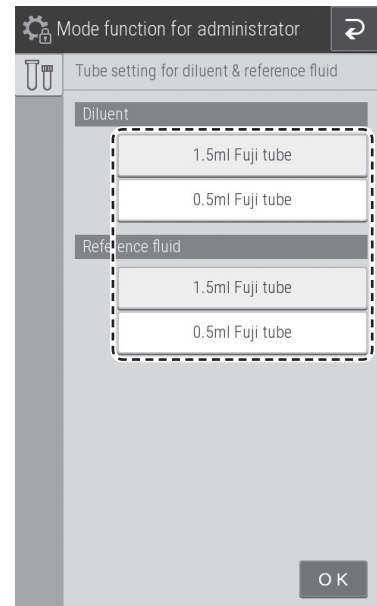


### 8.3.12 Tube Setting for Diluent & Reference Fluid

Configure the test tube type to be used for diluent and reference fluid.

**NOTE:** For the types of containers that can be used for diluent and reference fluid. Refer to Section 9.3.11 and Section 9.3.8

- Touch the button of the container you want to use.



### 8.3.13 Print Setting for Measured Result

Configure the print quantity (1 to 3 sheets) and print order of measurement results.

1. Touch the print quantity you want to configure.

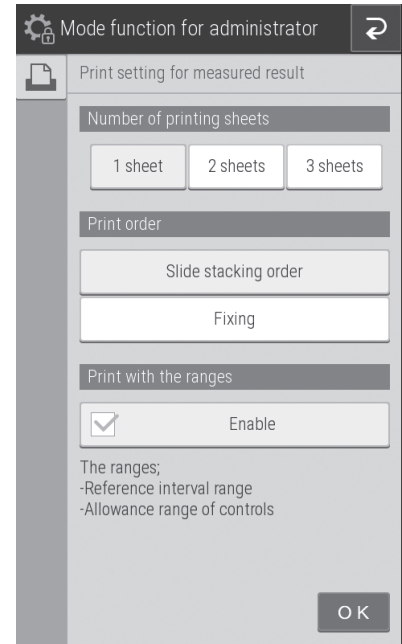
For [Print order], you can select [Slide stacking order] or [Fixing].

**NOTE:** If [Fixing] is selected, printing occurs in the following order:

TP → ALB → TBIL → GOT/AST → GPT/ALT → ALP → LDH → GGT →  
CPK → v-AMY → TCHO → TG → UA → BUN → CRE → Na-K-Cl →  
Ca → IP → Mg → GLU → NH<sub>3</sub> → v-LIP → TCO<sub>2</sub>

For [Print with the ranges], to print out the ranges along with test results, check the checkbox.

**NOTE:** By default, the checkbox is checked (enabled).



### 8.3.14 Operator ID Setting

Configure whether to display the Operator ID at the Measurement-preparation screen and Measurement results screen.

To display the operator ID, touch the check box.

**NOTE:** By default, the check box is cleared (not enabled).



### 8.3.15 Test Item Name Setting

You can configure the display of item names. The names appear in the screen display and printed paper of measurement results.

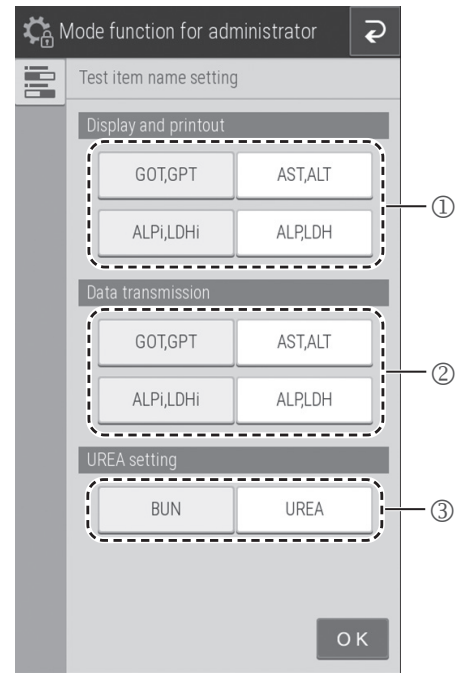
- ① Choose the item names to be used for display and printing.
- ② Choose the names to be used for external communication output to the host computer.

The selection of [ALPi, LDHi]/[ALP, LDH] is the display setting of the test name ALPi, LDHi. This is not the display setting of the test name ALP, LDH.

(ALPi and LDHi are slides compatible with the IFCC method.  
Availability depends on the region of sale.)

**NOTE:** If [ALP, LDH] is selected, ALPi, LDHi appears the same as ALP, LDH. Check this setting again before testing.

- ③ Choose the item names to be used. Touch either [BUN] or [UREA].



**NOTE:** When the name of BUN is changed to UREA, or vice versa, set again the following items.

Items
Reference interval
Correlation coefficient
Control fluid settings


**NOTE:** When BUN/UREA is changed, the change is reflected in the following items:

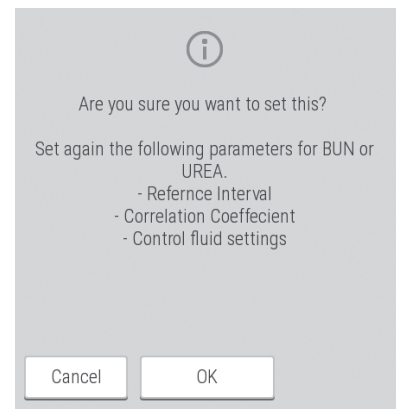
- Test Result
- Unit conversion
- Reference Interval setting
- Calculated Parameter
- Dilution factor Coefficients

**NOTE:** Regarding the BUN ↔ UREA conversion coefficient:

- UREA = BUN × 2.14 [mg/dL]
- UREA = BUN [mmol/L]

**NOTE:** Rebooting the device is necessary for the setting to take effect.

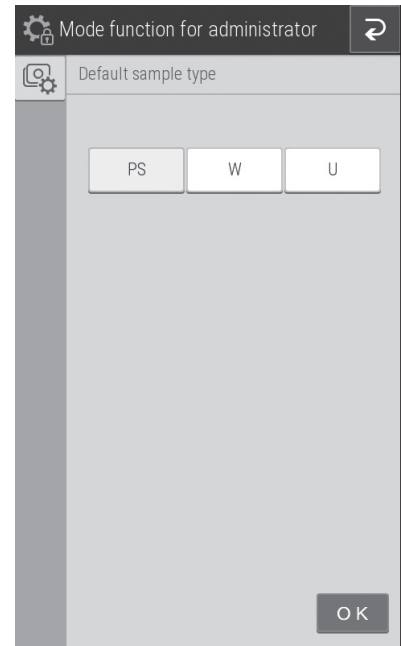
The confirmation dialog for the power-off will appear when  is touched to exit Mode function for administrator. After the shutdown, reboot the analyzer.



### 8.3.16 Default Sample Type Setting

Set the default (initial setting) sample type.

1. Touch a sample type to select it.





## 9.1 Data Communication

The Element DCX Analyzer can transmit measurement results to a host computer or PC that has been approved by the analyzer.

To communicate, it is necessary to prepare the software and a cable to receive data. Before you use this function for the first time, please contact Heska's Technical Support Services for assistance.

**NOTE:** Use a shielded LAN cable. Otherwise, electromagnetic interference may occur.

**NOTE:** When a LAN or RS-232C cable is not connected, measurement results are not sent. Make sure a cable is connected.

**NOTE:** When connecting this analyzer to a network, make sure it is placed inside of the fire wall to avoid cyber security risks.

## 10.1 Specifications

Processing speed	128 tests per hour (simultaneous CM and ISE measurements)
Number of incubator cells	CM: 13; ISE: 1
Incubation temperature	98.6°F (37°C) CM/89.6°F (30°C) ISE
Incubation time	1 to 6 minutes
Capacity for simultaneously loaded slides	20
Slide lot information	Each item: maximum 5 lots
Sampler	
1. Sample application fluid volume	50 µl or less (automatic switching)
2. Dilution	Automatic dilution (maximum 21x dilution)
Slide ejection	Automatic ejection (max. 100 slides into the disposal box)
Used tip ejection	Automatic ejection (max. 50 slides into the disposal box)
Measurement wavelengths	400 nm, 415 nm, 505 nm, 540 nm, 577 nm, 600 nm, 625 nm, 650 nm
Light source	Halogen lamp (6 V, 10 W)
Measurement precision	$\sigma \leq 0.0004$ OD/5 minutes
Measurement accuracy	Within $\pm 0.005$ OD (600 nm)
Display	7-in color touch panel
Backup data of test results	For 270 samples
Printer	Thermal type paper, size: 2.28 in x 27.34 yd (58 mm x 25 m)
Warming up time	Approx. 10 minutes/77°F (25°C), approx. 20 minutes/59°F (15°C)
Environmental conditions	Indoor use (6,000 cd/m <sup>2</sup> (lux) or lower. 3,000 cd/m <sup>2</sup> (lux) or lower when using the sample barcode reader.) Altitude: Up to 6,562 ft (2,000 m) (810 hPa) Transient overvoltage category: II Pollution degree: 2 Ingress protection rating: IP00 (No Protection) Operating temperature: 59°F to 89.6°F (15°C to 32°C) Operating humidity: 30% to 80% RH (no vapor condensation)
Storage and transport conditions	Temperature: 14°F to 122°F (-10 to 50°C) Humidity: 10 to 90% RH (no vapor condensation)
Voltage used	Single phase AC; 100–240 V $\pm 10\%$ ; 50 to 60 Hz
Consumption current	1.9–0.8A
Type of protection against electrical shock	CLASS 1 EQUIPMENT
Volume level	Within 70 dB (including buzzer sound)

Data transfer	RS-232C (1 port); USB (2 port); LAN (1 port)
External dimensions	(W) 18.5 × (D) 14.17 × (H) 14.57 in, (W) 470 × (D) 360 × (H) 370 mm
Weight	50.52 lbs (27 Kg)
Effective period of service (service life)	6 years after installation (This period is valid as long as the precautions for use are followed and regular periodic maintenance is performed correctly.)

## 11.1 Glossary of Display & Printout Messages

**NOTE:** Because the display spaces and printouts are limited, some abbreviations are used.

**NOTE:** Periods will not be used after abbreviations on the display and printout messages.

Abbreviation	Meaning
AD	Analog/Digital
Ave	Average
Bef comp	Before compress
Cali	Calibration
Charac	Character
Comm	Communication
Ctrl	Control
DA	Digital/Analog
Decomp	Decompress
ERR	Error
IC	Integrated Centrifuge
Info	Information
NG	No Good
OD	Optical Density
Prob	Problem