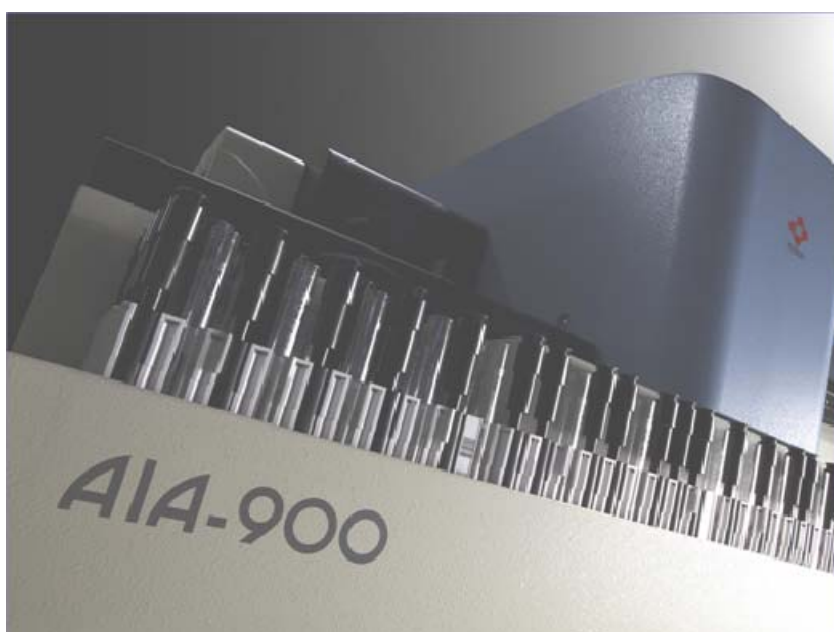


AUTOMATED ENZYME IMMUNOASSAY ANALYZER

AIA-900

Operator's Manual

Revision J



REF

022930

AUTOMATED ENZYME IMMUNOASSAY ANALYZER AIA-900

TOSOH CORPORATION
BIOSCIENCE DIVISION

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About This Manual

This Operator's Manual is designed to ensure that you can operate the AUTOMATED ENZYME IMMUNOASSAY ANALYZER AIA-900 safely and correctly.

This manual is geared to operators who have acquired all the technical qualifications required for working with the AIA-900.

It is recommended for you to carefully read and familiarize yourself with the information in this manual and operate the AIA-900 in strict accordance with the instructions provided.

Keep this manual in a safe, easily accessible location for reference purposes.

You must strictly adhere to all safety precautions outlined in this manual.

The material presented is subject to change without prior notification due to ongoing enhancements to system performance and functionality.

Be sure to include this manual whenever selling or relocating the AIA-900.

Should you notice any discrepancies, errors or omissions in the information provided, you are requested to immediately notify the nearest Tosoh Service Center or local representative.

Transfer or copy, in whole or in part, of the information contained in this manual is strictly forbidden.

Version Overview Operator's Manual AIA-900

Version	Date	Amendments
A		Original manual
B		Only applied in Japan
C		First European version
D	04/2012	See Overview 04/2012
E-H	07/2020	See Overview 07/2020
H1	05/2022	See Overview 05/2022
I	03/2024	See Overview 03/2024
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03/2024	4	4.3
	Address	Addresses
05/2022	0	0
07/2020	Safety Precautions	Caution (P II + IV + V)
		Other Cautions
		Symbols on the product labels
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	1	1
	2	2.1 - 2.2
		2.4 - 2.5
	3	3.1-3.2
	4	4.4
		4.4.1
		4.5.1 - 4.5.5
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		5.3.1-5.3.2
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		5.6 + 5.7 + 5.8
		5.9 + 5.10 + 5.11
	6	6.2 + 6.3 + 6.4
		6.5
	7	7.1-7.2
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		8.6.1
		8.6.3

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	10	10.1 + 10.2 + 10.3
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		10.7 + 10.9
		10.10
		10.12 + 10.13
		10.15
	11	11.1 + 11.2
		11.3 + 11.4
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	12	12.1
		12.1.8
		12.2.1
	13	13.1
	14	14.1
04/2012	Safety Precautions	Warning (P I) Caution (P IV + V)
	2	2.1
	4	4.5.4
	7	7.2.1
		7.2.2
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	8	8.3.2
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		[3119]
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Safety Precautions

Preface

It is recommended that both administrators and operators carefully read and familiarize themselves with the following safety precautions to ensure safe and correct operation of the AIA-900.

The information displayed using “Warning” and “Caution” signs in this manual are provided for the purposes defined below.



Warning

Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.



Caution

Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

Installation Precautions



Warning

- **Connect Analyzer to Suitable Power Source**
 - Be sure to connect the AIA-900 to a power source with a sufficiently high power rating that is free of voltage fluctuations.
 - Power sources that have an insufficient power rating or significant fluctuations in voltage pose a potential fire hazard.
- **Carefully Check Ground Connections**
 - Failure to properly ground the analyzer is a potential source of electrical shock.
 - Be sure to connect the analyzer to a socket with a ground.
 - Grounding the analyzer helps to both prevent system malfunctions due to noise and to reduce the risk of electrical shock.
 - Do not connect the analyzer ground line to gas pipes, water pipes, lightning rod or the telephone system ground line.

Gas pipes	: can ignite fires and cause explosions
Water pipes	: are not an effective ground
Lightning rod and telephone lines	: are a potential source of danger when lightning strikes



Caution

- **Select Installation Site with Care**
 - Refer to **Chapter 4: Installation** in this manual to select a suitable site for installation of the AIA-900. Always notify Tosoh local representatives when installing or moving the AIA-900.
- **Avoid Modifying Power Cords, Using Insufficiently Rated Extension Cords or Power Distribution Adapters**
 - These are potential sources of electrical shock or fire.
 - Always select extension cords that have a sufficiently high power rating and that have a ground line.
- **Make Sure the Plug Is Free of Dust or Dirt and Insert Firmly into Socket**
 - Be sure to remove and inspect the power plug several times a year.
 - Contamination by dust and/or foreign matter, failure to fully insert the plug into the socket or a loose connection may result in electrical shock or fire.

Precautions for Use



Warning

- **Handling Biohazards with Care**
 - Only persons with sufficient knowledge of immunological assay techniques and the procedures for handling infectious waste materials should be allowed to operate the AIA-900.
 - There is always the possibility that blood and body fluid may have been contaminated by infectious agents. Mistakes in system operation and handling of such materials can result in the transmission of infectious agents to the system operator and/or to nearby persons. It is recommended that all specimens be handled with the utmost of care and that the proper protective clothing (goggles, gloves, mask etc.) be used at all times during maintenance procedures.
 - All specimen containers, including used test cups, sample tips, reagent bottles, sample cups and waste fluids may have been contaminated by blood and body fluid. It is recommended that proper protective clothing (goggles, gloves, mask etc.) be worn at all times and that waste materials be disposed of in accordance with the following directives and all other relevant laws and regulations to protect all persons in the general operating vicinity and the surrounding environment.
- **Avoid Opening Covers or Panels during Assay Operations**
 - Opening covers or panels during operation exposes moving parts, such as the dispenser arm, which can cause severe personal injuries, including lacerations and/or the severing of fingers or hands.



Caution

- **Operate Only in Accordance with the Procedures Described in this Manual**
 - Attempts to operate the AIA-900 using procedures not prescribed in this manual may adversely affect the integrity of assay results and cause system malfunctions.
- **Preventing Fluid Leaks**
 - Leakage of assay solutions and Wash solutions are potential sources of corrosion, electrical shock and fire.
 - When fluid leakage is discovered, immediately shutdown the system and remove the power plug. It is recommended that proper protective clothing (goggles, gloves, mask etc.) be worn at all times when cleaning up leakages, and inspecting and repairing tube connections that are possible leak sources.
 - Should the analyser continue to leak, contact the nearest Tosoh local representatives.
- **Immediately Shutdown the System and Pull out the Power Plug when Signs of Malfunction (Burning Smell, etc.) Appear. Contact the nearest Local Tosoh Representatives.**
 - Continuing to operate an analyzer that is malfunctioning may result in electrical shock and/or fire.
- **Avoid Opening Covers or Panels and Inserting Fingers or any Foreign Object into Operating Mechanisms.**
 - The interior of the analyzer is comprised of motor driven components that operate at high speeds. Foreign objects or fingers and hands can easily get caught in the mechanisms, resulting in personal injury.
- **Keep Covers and Doors Closed During Operation**
 - Keep all covers and doors firmly closed during operation. The interior of the analyzer contains various moving parts, high-temperature components and high-voltage circuitry.
 - Fingers and hands can easily get snared or tangled in the mechanisms, resulting in lacerations, burns and electrical shock.
 - Special precautions must be taken when opening doors to replenish reagent and sample tip supplies during system operation.
- **Avoid Stopping and Starting System by Inserting and Removing the Power Plug**
 - Operating the AIA-900 in this way may damage and corrupt data on the hard disk in the controller PC and is a potential source of electrical shock and fire.
 - Whenever closing down the system, be sure to exit the system program using the Shutdown button, then exit Windows and turn off using the power supply switch located on the left front of the analyzer.
- **Avoid Damaging the Power Supply Cord**
 - The power cord may be damaged by excessive stretching and bending or anchoring the power cord into place, resulting in electrical shock and/or fire.
 - Always remove the power cord from an outlet using the plug.
 - Avoid Touching System Parts with Wet Hands
 - Touching certain system components may result in electrical shock.



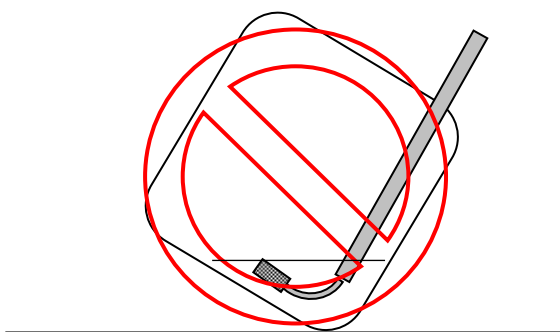
Caution

- **Only Trained Personnel should do the Maintenance**
 - Maintenance work must be performed by persons with proper knowledge of system maintenance procedures and who are equipped with proper protective clothing (goggles, gloves, mask etc.). Physical injuries sustained during maintenance work can result in infections from specimens. Therefore, it is important that maintenance persons conduct work in accordance with the procedures outlined in this manual and only after they have received sufficient training in maintenance procedures.
 - Please feel free to contact the local Tosoh representative for information on maintenance procedures.
- **Proper Disposal of Waste Materials**
 - Take appropriate steps to separate all used materials from assay operations, including test cups, sample tips, reagent bottles, sample cups, specimen containers and waste fluids, and dispose of them in accordance with designated procedures. Always wear protective gloves to avoid direct contact with such materials.
 - Waste materials must be disposed of in accordance with the relevant laws and regulations to protect all people in the general vicinity of the system and the surrounding environment.
- **Always Wear Protective Clothing**
 - Always wear suitable protective clothing (goggles, gloves, mask etc.) to prevent infection when working with specimens, waste fluids and system calibration accessories.
- **Inspect all specimens for air bubbles and foaming. Remove any air bubbles prior to analysis.**
 - The liquid surface detection automatically performed on every specimen by the instrument is susceptible to bubbles or foaming. The instrument may detect the bubble as the liquid surface. Do not run samples which contain bubble or foam. Make sure to remove any air bubbles prior to analysis regardless of their size.
- **Place Fluid Containers Only in Designated Locations**
 - Placing solution containers randomly within the main unit may result in spillage, which can cause short circuits that can damage electrical insulation and result in electrical shock.
- **Use Only Tosoh Designated Components**
 - Use only accessories and consumables (supplies) listed in the Maintenance Accessories and Consumables section.
- **At system shutdown, replace the substrate solution remaining in the substrate line with substrate replacement solution (70% ethanol or 70% isopropyl alcohol)**
 - If the substrate solution remains in the substrate line for a long time, it may precipitate. Precipitation in the substrate line may clog the substrate line. Replacement of the substrate solution with distilled water may cause contamination of the substrate line and raise the substrate background.
Make sure to use the substrate replacement solution (70% ethanol or 70% isopropyl alcohol) at system shutdown.



Caution

- **Avoid Placing any Source of Flame Near the Substrate Compartment**
 - It is important not to place any sources of flame near the Substrate compartment, as the Substrate line contains 70% ethanol or 70% isopropyl alcohol at the end of assay operations.
- **Do not tilt the Wash tank or Diluent tank while the analyzer is running**
 - The precise volume remaining in the Wash or Diluent tank will not be detected if the tanks are tilted. In addition, this may cause incorrect results due to aspiration of the air from the duct rather than liquid from the tank.
To avoid this problem, do not tilt the tanks.
 - Even if the error message “Washer/Diluent shortage. Operation stopped.” is displayed during assay operations, as long as the tanks are not tilted, a sufficient volume of the Wash remains in the tank for B/F operations for the specimens which have already been sampled up to that time. The assay operations will be paused with this error message, but will be resumed as soon as the Wash/Diluent is refilled.



Removal of instrument from use for repair or disposal



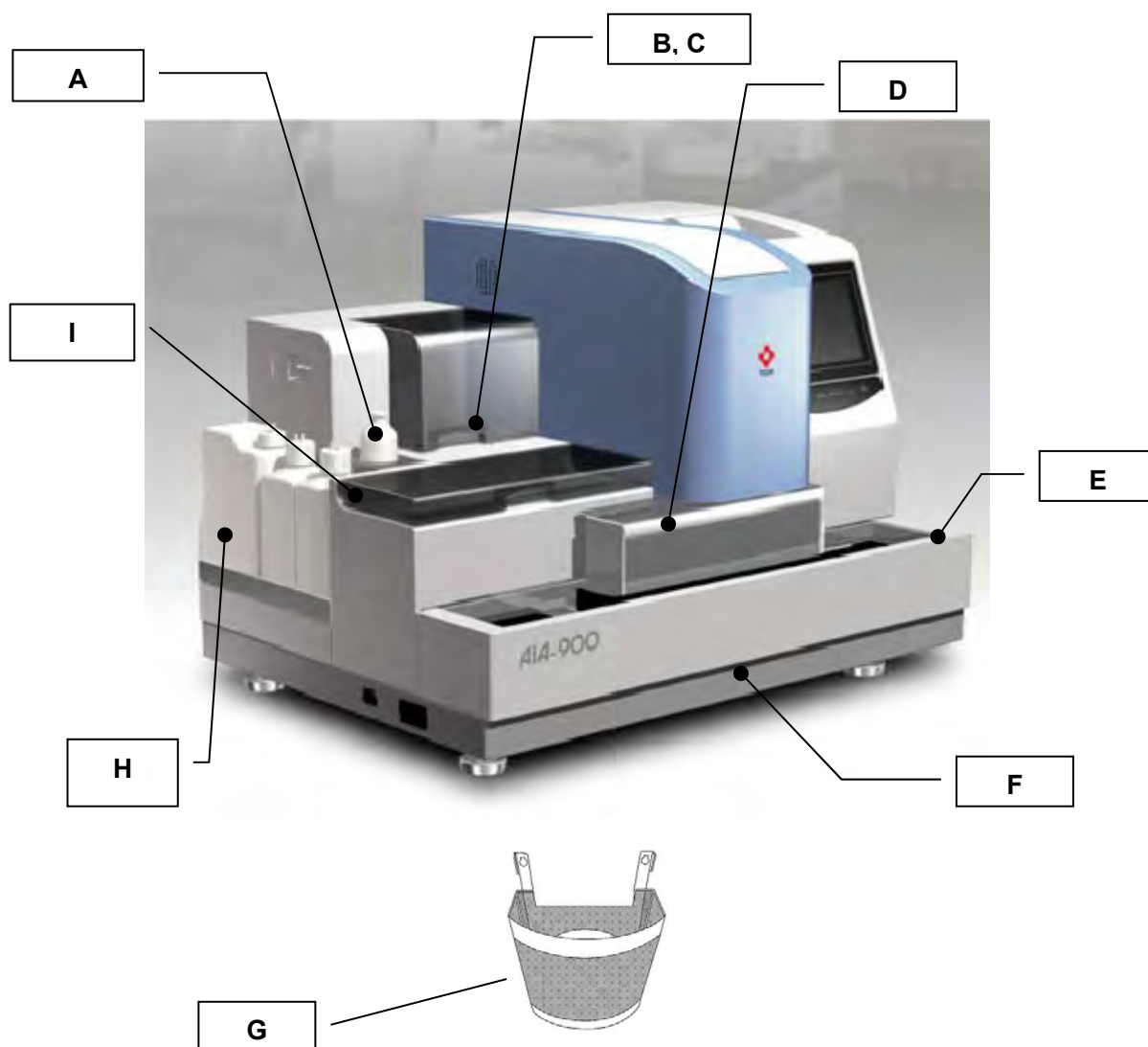
Warning

- **Contact a Tosoh Local Representative**
 - There is always the possibility that blood and body fluid may have been contaminated by infectious agents. Mistakes in system repair or disposal can result in the transmission of infectious agents to the system operator and/or to nearby persons. Please contact a Tosoh local representative for analyser repairs or information on disposal.

Other Cautions

• Locations of “Caution” Labels

- Caution labels are located at various positions on the AIA-900. Read these carefully to ensure safe system operation.



A. Caution label at the location of the Substrate Bottle



When installing a Substrate Bottle, set it in such a way that the label is at the front. If the label is not facing the front, it will be impossible to correctly detect the quantity of residual substrate. Use a 70% solution of ethanol or isopropyl alcohol to flush out the substrate line. Do not bring a source of fire close to the substrate line because of the danger of fire.

B. B/F Wash Probe Biohazard Label



Never touch the B/F Wash probes while the system is in operation, as this may affect the integrity of assay results. Doing so may also result in personal injury caused by contact with moving parts.

The B/F Wash probe tips are contaminated by the specimen so must be handled with the utmost care.

C. Wash Unit Cover Caution Label



Avoid inserting hands in the wash unit cover, as moving parts can cause personal injuries.

Doing so may also result in personal injury caused by contact with moving parts.

D. Sample Rack Setting Point Caution Label



If you wish to add a sample rack while measurement is taking place, put the instrument into a pause status to stop the sample loader.

E. Sample Loader Caution Label



Make sure to pause any current assay operations and stop the Sample loader before attempting to add new Sample racks. Note that the Sample racks must be positioned in front of the line or the rack may not load properly.

F. Tip and Reagent Cup Disposal Area Biohazard Label



Used tips and test cups are contaminated with the samples. When touching the disposal area, be sure to wear gloves because of the danger of contamination.

G. Waste Box Biohazard Label



Be sure to wear appropriate protective clothing, such as gloves, when handling the Waste box, as discarded cups and tips have been contaminated by potentially infectious specimens.

H. Waste Tank Biohazard Label



Be sure to wear appropriate protective clothing, such as gloves, when handling the Waste tank, as waste liquid has been contaminated by potentially infectious specimens.

I. Sample Tip Cover Caution Label



Avoid inserting hands in the sample tip cover, as moving parts can cause personal injuries.

Doing so may also result in personal injury caused by contact with moving parts.

Symbols on the product labels



European Conformity



Manufacturer



Authorized representative in
the European Community



Catalogue number / Part
number



In Vitro diagnostic medical
device



Supplied by



Serial number / Column
number

- If the Warning or Caution labels become difficult to read due to dirt or peeling, contact local Tosoh representatives for replacement labels.
- Keep this manual in a safe, easily accessible location for reference purposes. Ensure that all new operators and administrators have access to this manual.

— Copyright —

- Copying or transferring all or a part of this manual without the manufacturer's approval is prohibited.
- The content of this manual is subject to change without notice.

Contact local Tosoh representatives When Requesting Repairs

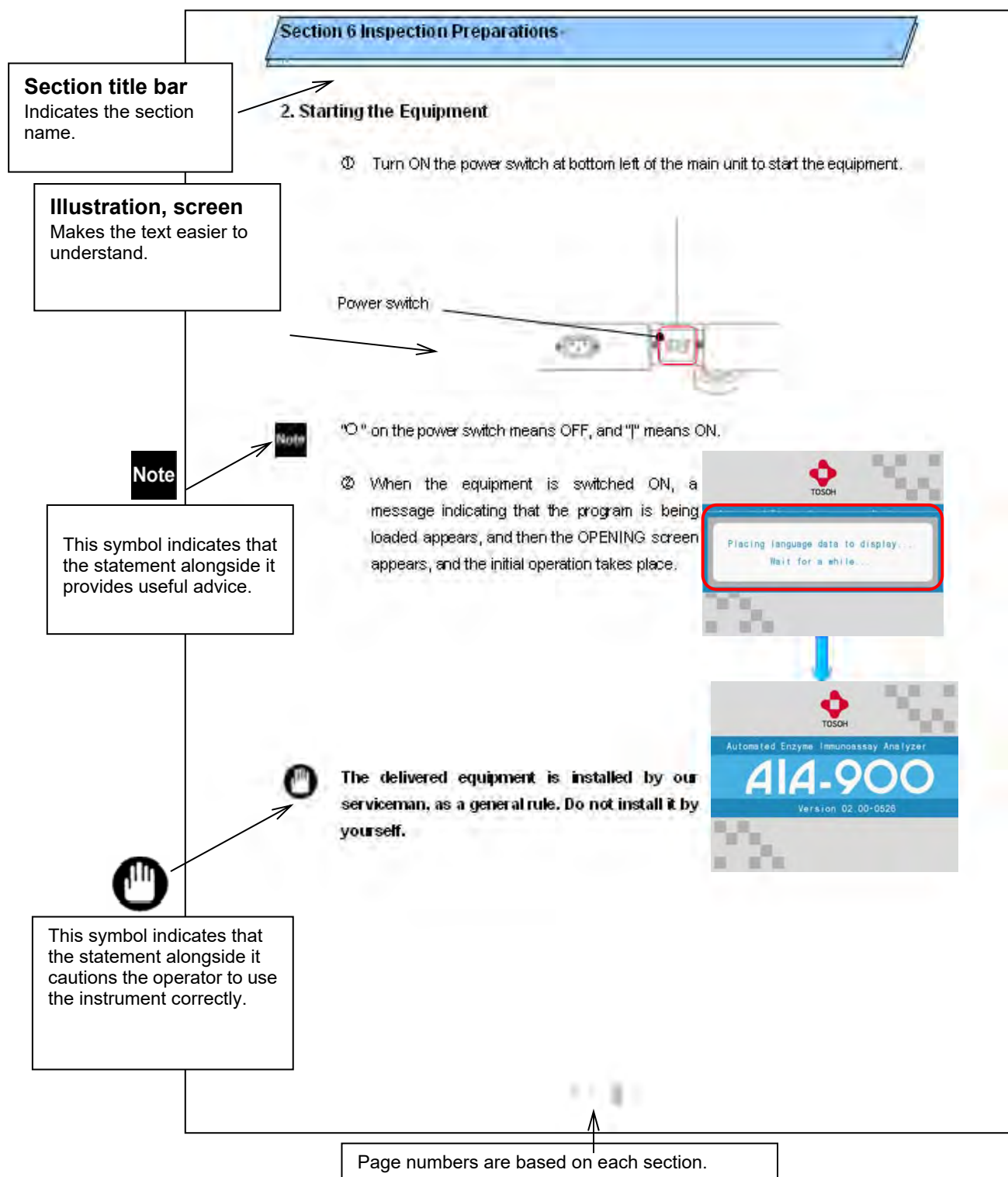
- Improperly performed in-house disassembly, repair and modification work may result in electrical shock and/or fire.

TOSOH CORPORATION
BIOSCIENCE DIVISION

How to Read this Manual

This instruction manual describes the method of using and operating AIA-900 to ensure that you can fully understand the way in which it works and also operate it correctly. It has been compiled based on the following rules.

Please use these rules as a guide to reading this manual.



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Section 0 Intended Use

The AUTOMATED ENZYME IMMUNOASSAY ANALYZER AIA-900 is an automated analyser that measures a variety of substances in serum, plasma, and urine using the AIA-PACK reagent series. The AIA-900 is for in vitro diagnostic use by healthcare professionals only.

A notice to the user:

Any serious incident that has occurred in relation to the device should be reported to the manufacturer and the regulatory authority (e.g. EU competent authorities) in the country where the user and/or patient is established.

0.1. Test Principles

The AIA-900 is capable of performing three methods of immunoassay: an immunoenzymetric (IEMA) or sandwich immunoassay, a competitive binding (EIA) immunoassay, and a two-step immunoenzymetric immunoassay.

An antigen-antibody reaction begins by combining a patient sample, control, or calibrator with a diluent in an immunoreaction test cup from the AIA-PACK reagent series.

In the IEMA assay, during the incubation period, the antibodies attach to two distinct epitopes on the antigen being measured forming a sandwich.

In the EIA assay, during incubation, antigen in the patient sample competes with enzyme labelled antigen for a limited number of antibody binding sites.

In all methods, specimens are incubated at 37 °C with antibody bound to the surface of magnetic beads. Separation of the bound antibody from the free antibody is achieved by washing the beads with a wash solution that removes any unbound conjugates.

After washing, a substrate, 4-methylumbelliferyl phosphate (4- MUP), is added to the test cup. The remaining enzyme activity on the solid phase (magnetic beads) is then measured using fluorescent rate method.

Figure 1. AIA-Systems Reaction Scheme illustrates the reaction scheme used on the AIA-900.

Figure 2. AIA-Systems Assay Principles illustrates the assay principles used on the AIA-900.

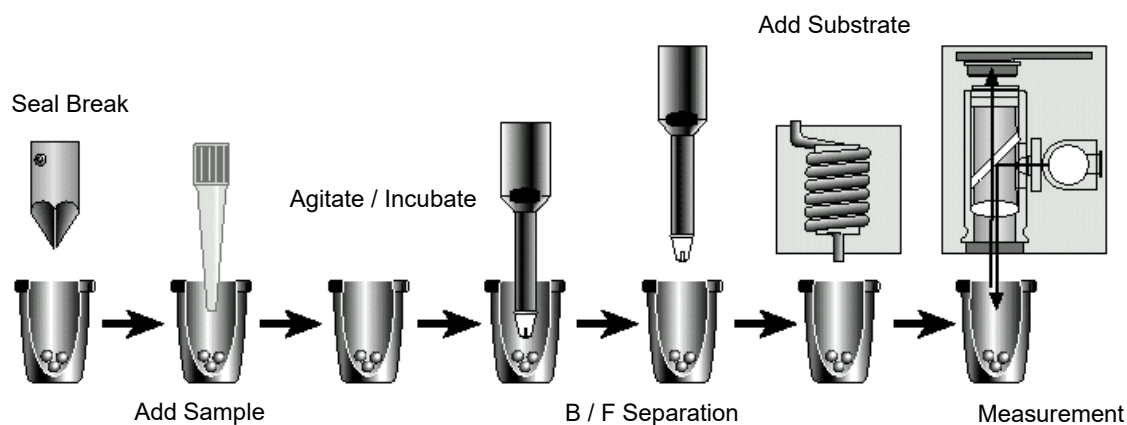


Figure 1. AIA-Systems Reaction Scheme

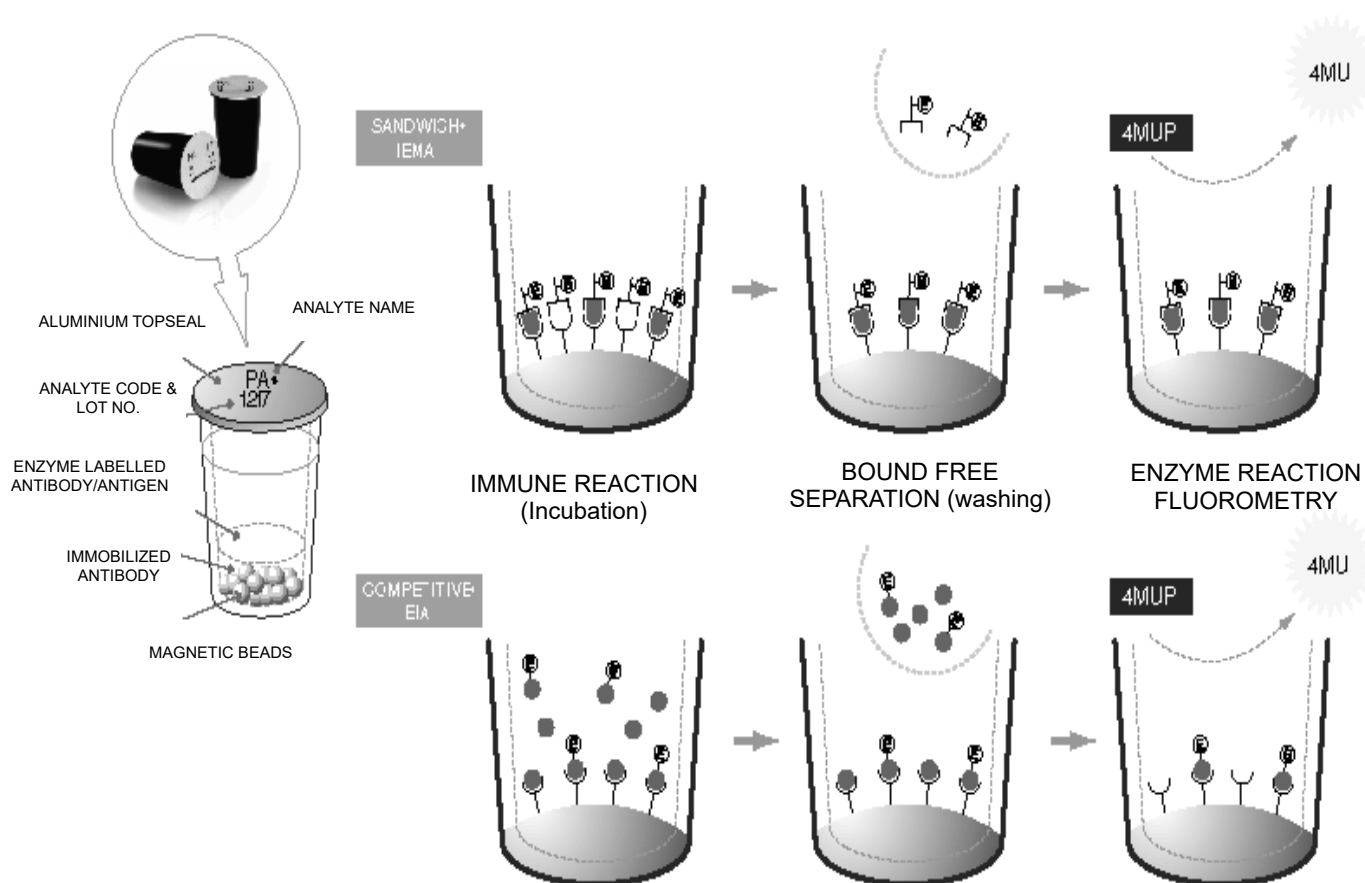


Figure 2. AIA-Systems Assay Principles

Section 1 Basic Precautions

The following are the basic precautions for using the AIA-900.

- **Registration of the operator and the administrator**

In order to use the AIA-900, a user who has been registered in the system must log on. The user must be an authorized operator or administrator; only the administrator is permitted to edit the criteria for measurement value control and other important parameters established at each facility. Both administrators and operators are permitted to perform routine assay operations.



As soon as the instrument is installed, be sure to register an administrator and an operator, and restrict the use to persons who have received specific training for the instrument. If a person who has not received the specific training operates the instrument, the instrument may have problems and/or erroneous assay results may be reported from the instrument.

- **Operation training**

After the instrument has been delivered, a trained service person will install it and explain how to use it. For details of the logon method at the administrator level, please ask Tosoh local representatives.

- **System control**

To obtain correct measurement results at all times, it is necessary to correctly control the instrument and the reagents according to the stipulated control standards. To check whether or not the instrument and the reagents exhibit the specified performance, measure the control at constant intervals, and confirm that the results are within the control range.

The instrument incorporates a self-diagnostic function. If an abnormality occurs, an error message will appear, so take action according to the instructions set out in this manual.

Section 1 Basic Precautions

- **Reagent handling**

For reagents requiring lot management, the AIA-900 recognizes their lot numbers. Since mixing such reagents from different lots makes the lot management impossible, reagents must be handled correctly according to their Instructions for Use.

- **Samples**

Users are asked to avoid assaying the following types of specimens, as they can affect system operation. For details of the logon method at the administrator level, please ask Tosoh local representatives.

- Specimens that have a tendency to clot during the assay process.
- Specimens containing solid particles that tend to form occlusions during dispense operations.

Section 2 Introduction

This operator's manual provides a detailed description of the system configuration and operating procedures for the AUTOMATED ENZYME IMMUNOASSAY ANALYZER AIA-900. You are recommended to read carefully and familiarize yourselves with the information provided in this manual before commencing operation of the instrument.

2.1. Outline

The AIA-900 automatically performs assays through all the processes from specimen sampling to output of results and has a processing capacity of maximum 90 assays per hour. Assay results will be output about 18 minutes after the assay is started. During the operation additional specimens can be set at any time. For one specimen, a maximum of 5 analytes can be assayed. When the 9tray Sorter is used, a maximum of 9 analytes can be assayed for one specimen. When the 19tray Sorter is used, a maximum of 19 analytes can be assayed for one specimen.

The general description of these Sorters is written in "2.4 Sorter (optional unit)".



Enzyme Immunoassay Analyzer
AIA-900

2.2. Specifications

Basic specifications

Assay principle	Fluorometric enzyme immunoassay (FEIA) method
Processing method	Fully automated continuous random access
Processing capacity	Max 90 assays/hour (ST reagent)
In vitro diagnostic reagent	ST AIA-PACK and AIA-PACK
Specimen Volume	10 - 125 µl
Specimen clogging detection	Pressure detection method
Assay condition	Reaction temperature: 37 °C
Automatic Specimen dilution function	Antigen-antibody reaction time: 10 minutes, 20 minutes, 40 minutes Two dilution ratios between 2 and 1000 can be selected for each assay.
Detection method	Fluorescent assay (top-top method)

Sample loader

Number of loadable sample racks	Max 10
Total number of samples and test cups	Max 100
Specimen containers	Outside Diameter (O.D.) x height of test tube (13 x 75 mm, 13 x 100 mm, 16 x 75 mm, 16 x 100 mm) Dedicated sample cups can be used together.
Specimen barcode	Supports CODE39, CODE128, ITF, NW-7, JAN/EAN/UPC, industrial 2of5, and COOP2of5. Minimum element width (narrow width): 0.191 (Recommended 0.254 or more)

Reagent tip loader

Sample tip	Dedicated tip
Number of installed sample tips	Max 192 tips (96 tips/rack in 2 racks)
Number of reagent sets	Max number of reagent vials: 12 Max number of reagent bottles: 4

Section 2 Introduction

External output	RS232C
Power source/Power consumption	100 - 240 V ac, 50/60 Hz, 300 VA
External dimensions/Weight	Width 890 mm x Depth 665 mm x Height 642 mm/ 122.5 kg

Transportation environment and installation environment

Refer to Section 4 "Installation".

Operating Environment

Temperature:	15 °C – 30 °C (degrees Celsius)
Humidity:	40 % - 80 % R.H. (non-condensing)
Dust:	Levels equivalent to the average office

Conformity standards

EMC standard	IEC61326-1: 2005; IEC61326-2-6:2005
CISPR class classification, group classification	Class A, Group 1
FCC	Part15 Sub Part B Class A
Built-in barcode reader	Class 1: IEC60825-1: 1994

2.3. Confirming the Packed Content

As a rule, Tosoh service personnel always set-up the system. You are requested to refrain from opening the packing box and attempting to install the system yourselves.

You are requested to confirm, in the presence of the Tosoh service person, that all accessories in the following list are included with the system when it is unpacked.

Packing List

<<Accessories>>

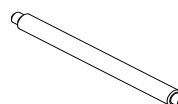
- Power cable: 1



- Silicone Cap: 5



- Printer paper Mandrel: 1



- Cup Holder: 80



- Sample Rack: 10



- Sample Cup Adapter: 60



- Tip Rack: 2



- Waste Tube: 1
- Diluent Tube: 1
- Washer Tube: 1

- 100 ml Bottle (with Silicone Cap): 1



Section 2 Introduction

- Reagent Rack C (S1, S2, S5, S6): 1



- Reagent Rack B (S3, S4, S7, S8): 1



- Reagent Rack A (S9, S10, S11, S12): 1



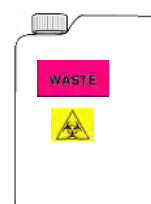
- Diluent Tank 1000 ml: 1
(DILUENT)
(with tube, anchor, and sensor)



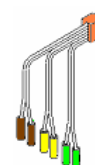
- Washer Tank 1000 ml: 1
(WASHER)
(with tube, anchor, and sensor)



- Waste Tank 2000 ml: 2
(WASTE)
(One tank has a sensor)

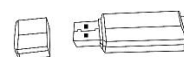


- Level sensor lead wire: 1

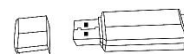


- Overflow tube (2 m): 1

- USB Flash Drive: 1



- AIA-900 System Program: 1

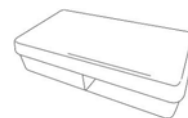


- Waste Box: 1



Section 2 Introduction

- Toolbox: 1



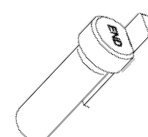
- Phillips head screwdriver (No.2): 1



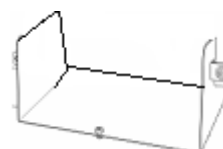
- Screwdriver: 1



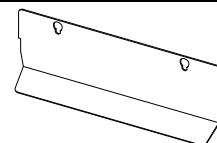
- Endmarker: 1



- Waste Duct (with two mounting screws): 1

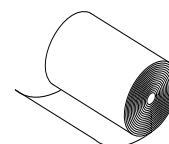


- Waste Cup/Tip Cover: 1

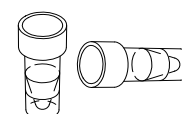


<<Consumables>>

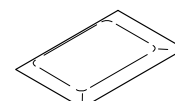
- Printing paper (heat sensitive paper roll): 1 roll



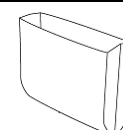
- Sample Cup: 1000



- AIA-PACK Detector Standardization Cup (STD cup): 2 trays (40 cups)



- Waste Bag: 20

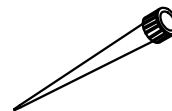


Section 2 Introduction

- Probe tip: 2/bag



- Sample Tip: 1000/bag



- Exhaust Duct Protector: 20

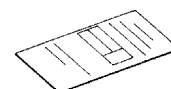


<<Other items>>

- Instruction Manual (this manual): 1



- Inspection Certificate: 1



If any items are missing, immediately contact local Tosoh representatives.

2.4. Sorter (optional unit)

When a sorter is connected, test cups are automatically supplied from the sorter to the analyzer. Information on operations with a sorter is indicated "with a sorter" in this manual. For more details on operations with a sorter, refer to **Section 5 "System Preparations."**

Two types of sorters are available depending on the storage capacity of test cups: the 9tray Sorter (a maximum of 180 test cups can be stored) and the 19tray Sorter (a maximum of 380 test cups can be stored). Please ask Tosoh local representatives about the connection to the sorter.

AIA-900 with 9tray Sorter connected
Width: 890 + 400 mm; weight: 163 kg



AIA-900 with 19tray
Sorter and analyser-stand connected
Width: 890 + 630 mm; weight: 273 kg



2.5. Handheld barcode reader (optional equipment)

Using the handheld barcode reader (handheld BCR) below will help you input specimen IDs for the order, and concentration values of calibrators for establishing a calibration curve. Please contact Tosoh local representatives for a handheld BCR.



Connect the handheld BCR to the AIA-900 while it is turned off.

The HANDY-BCR port is located on the right side of the AIA-900 main unit.

When the AIA-900 is turned on, the instrument will automatically detect the handheld BCR and enable its use.



This image shows a full page of a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Section 3 Analyzer Overview

3.1. Main unit



- A. Printer
- B. Operation panel and sheet keys
- C. External connection ports
- D. Sample loader
- E. Substrate bottle mounting position
- F. Wash unit cover
- G. Reagent and tip cover
- H. Tank tray
- I. Power switch



A. Printer

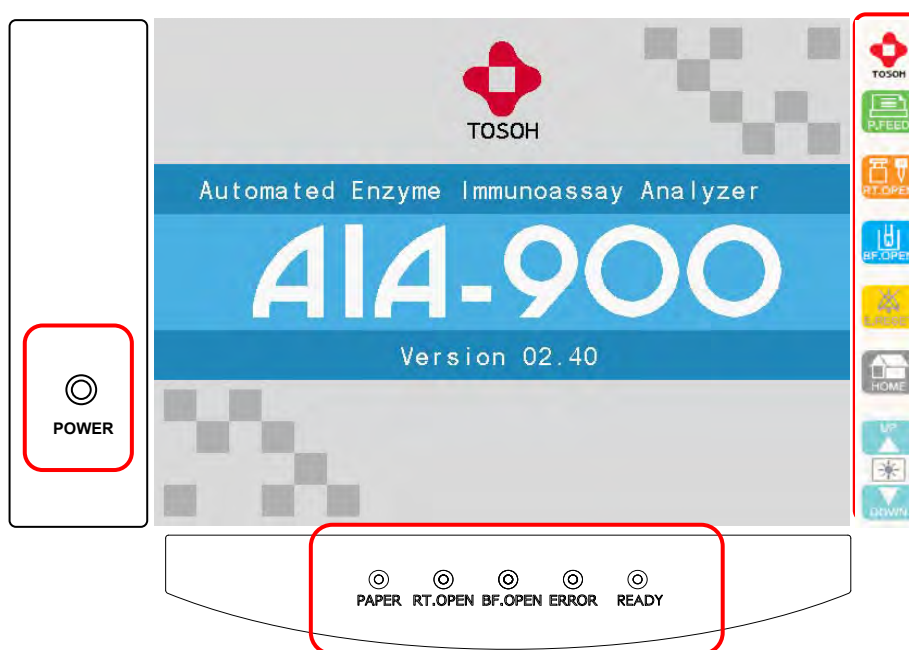
This printer uses thermal paper. It prints the assay results, and instrument parameters.

B. Operation panel, sheet keys and status LEDs

The analyzer has a liquid crystal display with a touch panel and also sheet keys for displaying the operating condition and keying in data.

Creation of assay requests, orders for calibration curves etc. are performed on the touch panel.

Also, the operation condition of the instrument, the assay results, and other data, are displayed on the screen.



: Feeds the printer paper



: Opens the reagent and tip cover to supply the reagents and tips



: Opens the washing unit cover.



: Cancels an error status and stops the buzzer.



: Returns to the home screen.



: Increases the brightness of the liquid crystal display.



: Decreases the brightness of the liquid crystal display.

Section 3 Analyzer Overview

Status is indicated by LEDs.

LED label	LED light status		Meaning
	Colour	Display pattern	
POWER	Green	Lit	Instrument power is ON.
PAPER	Green	Lit	Ready to print
	Red	Lit	Printer paper running short / printer error
RT. OPEN	Green	Blinking	Preparing for the reagent and tip cover lock release
	Green	Lit	The reagent and tip cover lock release is ready to open
	Red	Blinking	The reagent and tip scan is preparing to open. Since the planned use of conjugate and pre-treatment reagent will soon start, do not press the RT. OPEN key.
BF.OPEN	Green	Blinking	Preparing for the wash unit cover lock release
	Green	Lit	The wash unit cover lock release is ready to open
ERROR	Red	Lit	An error is occurring (press E.RESET key to turn off the sound and light)
READY	Green	Lit	Instrument start-up is complete.
	Red	Lit	Substrate/washer/diluent is running short, or waste is at full capacity

C. External connection ports

The external connection ports are used for a USB flash drive, an optional barcode scanner and RS-232C communication with an external device.



A USB flash drive can be used to save assay results and parameters unique to the instrument.

In addition, a USB flash drive is used when upgrading the system program.

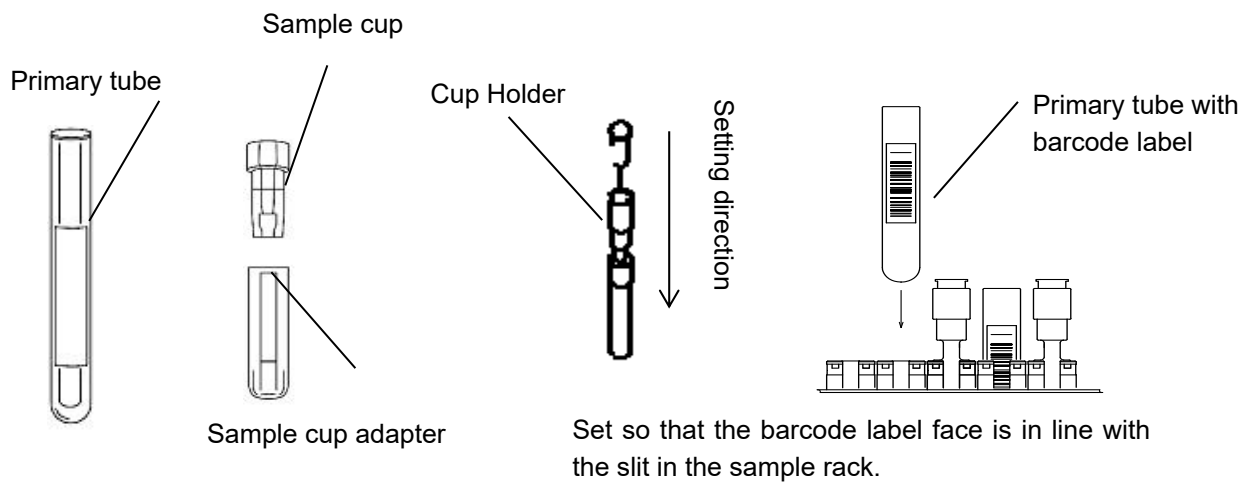
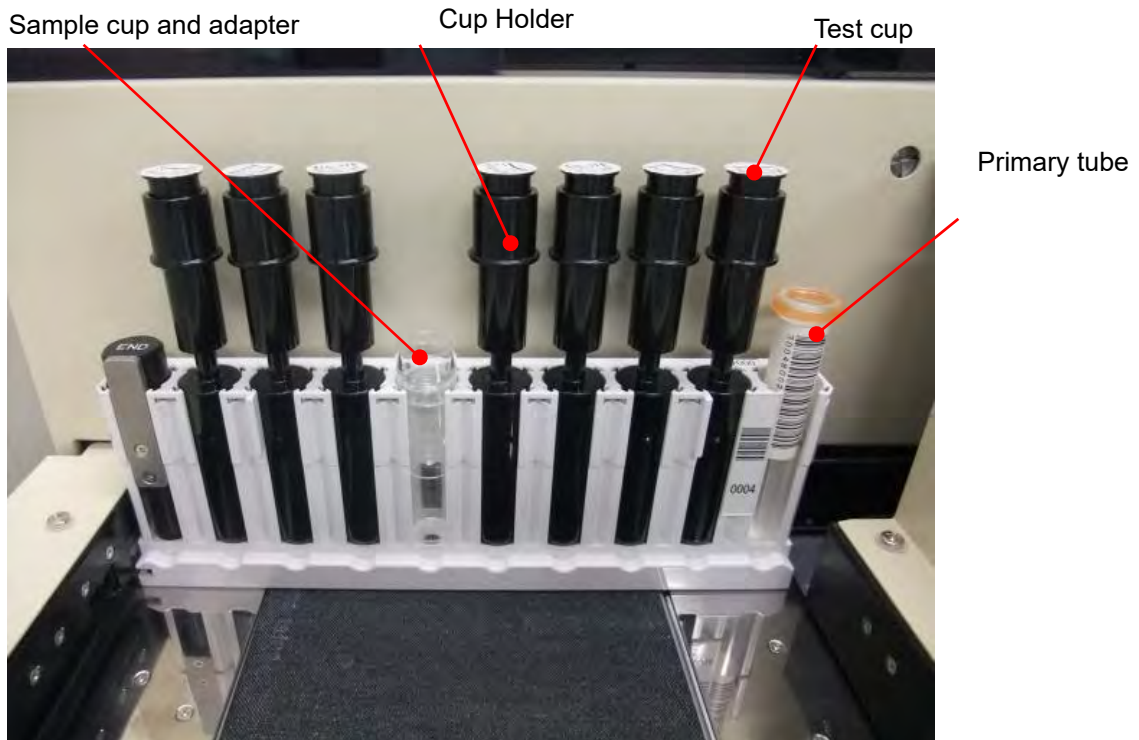
Connect only a USB flash drive to the USB flash drive connection port.

If you connect a device other than a USB flash drive to this connection port, a breakdown is liable to occur.

Switch OFF the power before connecting a barcode scanner (optional). If you plug or unplug the connector while the analyzer is ON, a breakdown may occur.

D. Sample loader

The sample loader conveys both the samples set in the sample rack and the test cups on the cup holder.



Note

When not using a sorter, a maximum of 5 analytes can be assayed for one specimen. In the case of using a 9tray sorter, a maximum of 9 analytes can be assayed for one specimen. In the case of using a 19tray sorter, a maximum of 19 analytes can be assayed for one specimen. Test cups are set in the sorter. (Refer to “8.3 How to align the specimen and the test cup.”)



Firmly insert the sample cups into the sample cup adapter.
Firmly insert the primary tube, sample cup adapters and cup holders in the sample rack. If they are not inserted completely, it will not be possible to transfer the sample rack properly, resulting in cancellation of the assay.

E. Substrate mounting position

Install the substrate bottle or the 70% ethanol or 70% isopropyl alcohol bottle used for changing over the Substrate.

F. Wash unit cover

This cover is opened in order to carry out maintenance work on the wash probe.
For details of maintenance work, refer to **“Section 11 Daily Maintenance and Control.”**

G. Reagent and tip cover

This cover is opened in order to set the reagent vial (sample diluting solution, 2-step reagent, etc.) and the sample tips. For details of setting, refer to **“Section 5 System Preparations”**.

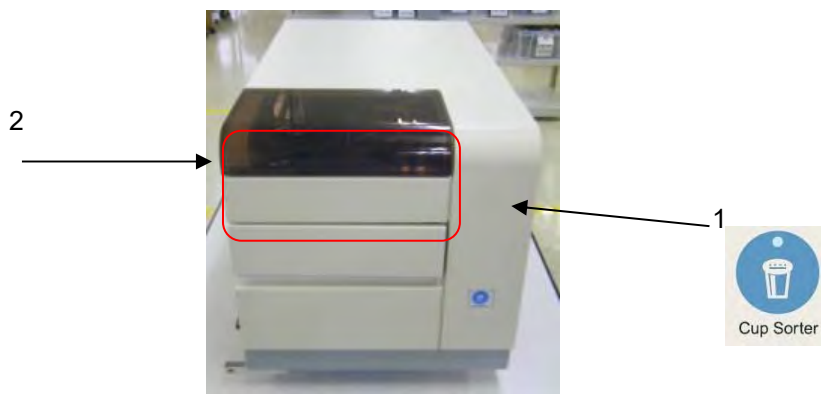
H. Tank set position

Install the Washer Tank, the Diluent Tank, and the Waste Tank. The capacity of both the Washer Tank and the Diluent Tank is 1 L, and the capacity of the Waste Tank is 2 L.

I. Power switch

This switch is used to supply or not to supply power to the AIA-900.

3.2. Sorter



- (1) Cup Sorter key
Pressing this key makes it possible to open the drawer.
- (2) Drawer
Open this drawer when setting the test cup trays in the sorter.

LED label	LED light status		Meaning
	Colour	Display pattern	
Cup Sorter	Green	Lit	Drawer is unlocked.
	Green	Blinking	Preparing for the drawer lock release
	Red	Lit	Planned use of reagents loaded in the sorter will soon start.
	Red	Blinking	Sorter scan is underway (time required: about 15 sec. for 9tray Sorter, about 30 sec. for 19tray Sorter).



Do not leave the drawer lock in a released position if the Cup Sorter LED is lit red. Otherwise, use of test cups will no longer be possible, the assay will be skipped, and consequently some of results cannot be obtained.

Section 4 Installation

The AIA-900 is a precision analyser. To ensure that it operates stably, it is necessary to adjust it correctly. For this reason, when the equipment is to be installed subsequent to delivery, or moved, we dispatch a service engineer trained in installing and maintaining the equipment to the site.

When installing the equipment, please follow the instructions of the service engineer.

4.1. Installation Environment

Install the instrument on a level table or desk in a location that is not exposed to toxic gas, dust, vibration, direct sunlight, or wind.

Use the instrument under the following conditions.

Temperature:	15°C to 30°C (degrees Celsius)
Humidity:	40 % – 80 % R.H. (non-condensing)
Power source:	100 - 240 Vac 300 VA, 50/60 Hz
Overvoltage category:	II
Pollution Degree:	2
Dust:	Levels equivalent to the average office
Max. altitude:	2000 m

4.2. Environment of transportation or storage

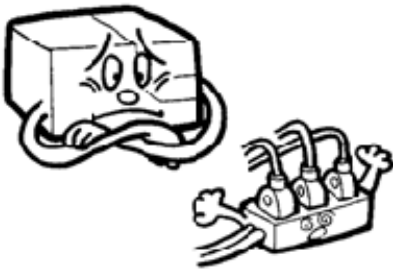
Transport or store the instrument under the following conditions if it had been installed previously.

Temperature:	5°C to 50°C(degrees Celsius)
Humidity:	80 % max R.H. or less (non-condensing)
Others:	Keep dry & store indoors

4.3. Installation Location

Do not install the instrument in the following locations.

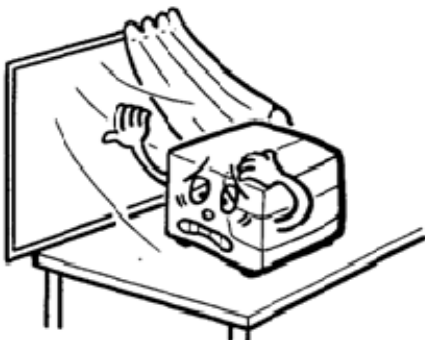
- Sharp fluctuations in power supply voltage



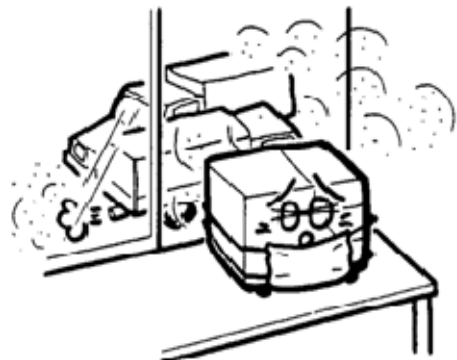
- Sharp fluctuations of temperature



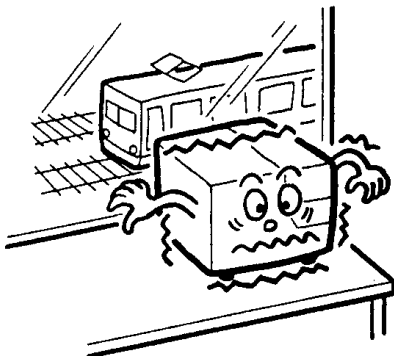
- Powerful air currents



- Excessive dust



- Excessive vibrations

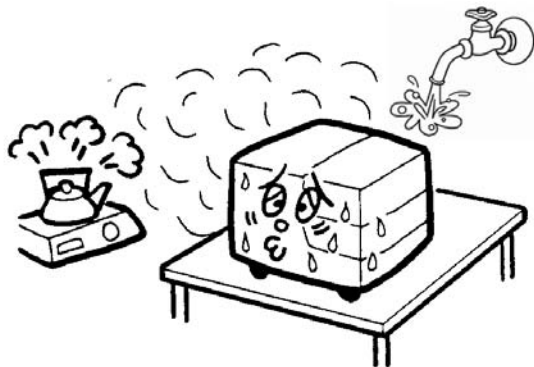


- Unstable foundations



Section 4 Installation

- Locations with high humidity (> 80 %)
- Locations near water sources, such as a sink



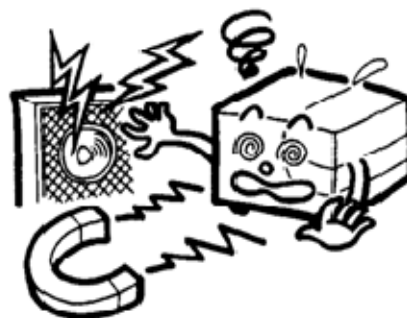
- Open flames



- Narrow spaces with poor ventilation



- Strong electromagnetic fields and high frequencies



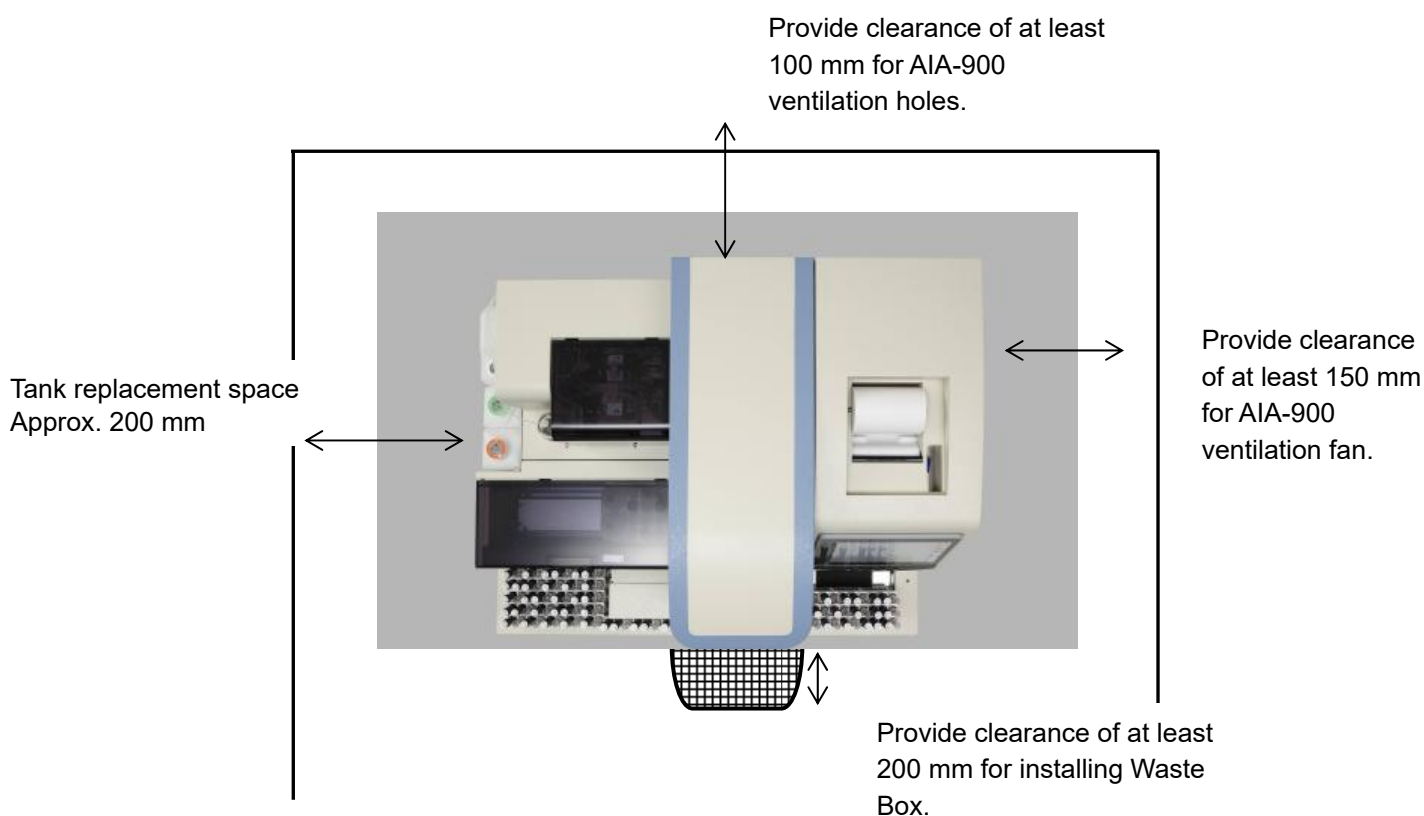
4.4. Installation Space

The dimensions of the AIA-900 are: width 890 mm x depth 665 mm x height 642 mm.
In addition to the space required to install the main unit, the following space is necessary.

- About 200 mm is necessary for replacing the Diluent Tank, the Washer Tank, and the Waste Tank.
- A ventilation fan is installed on the rear part of the right side panel in order to ventilate the inside of the AIA-900. To prevent blocking the air flow, keep the right rear of the AIA-900 at least 150 mm from a wall or other obstacle. The rear panel of the instrument has ventilation holes, so keep it at least 100 mm away from the wall and other obstacles.
- When not installing the analyser-stand, ensure a space of 200 mm or more is available in front of the instrument, as this space is required for the installation of the dedicated Waste Box.

The weight of the AIA-900 is 122.5 kg; however this will increase to about 125 kg when the reagents are set in place.

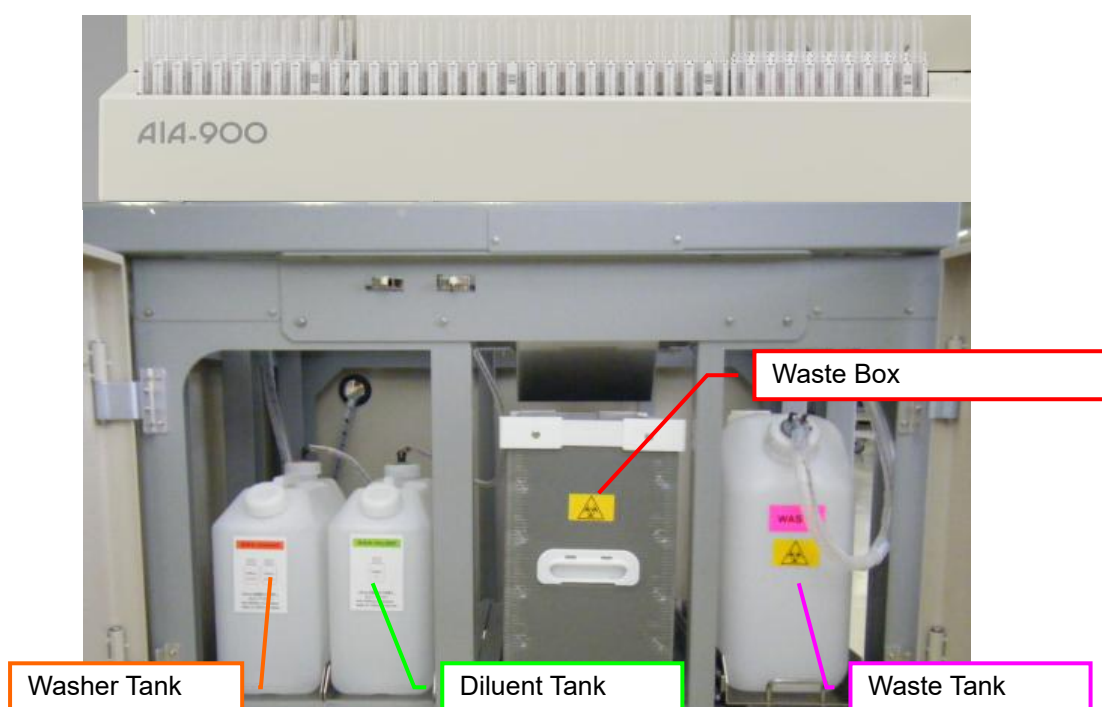
Install the AIA-900 on a base that can adequately withstand this weight and is also rigid (suppresses vibration). When it is necessary to move the AIA-900, have this work done by at least four persons.



4.4.1. Analyser-stand (optional equipment)

An analyser-stand is available for use when installing the AIA-900 main unit. It is possible to install a 5 L Diluent Tank, a 5 L Washer Tank, a 10 L Waste Tank, and a Waste Box (with Waste Bag) in this analyser-stand. Please contact Tosoh local representatives for installation of an analyser-stand.

When the AIA-900 is installed with the analyser-stand, the dimensions are 891 mm (W) x 665 mm (D) x 1292 (H) mm and the weight is 180.5 kg (58 kg + 122.5 kg for the main unit).



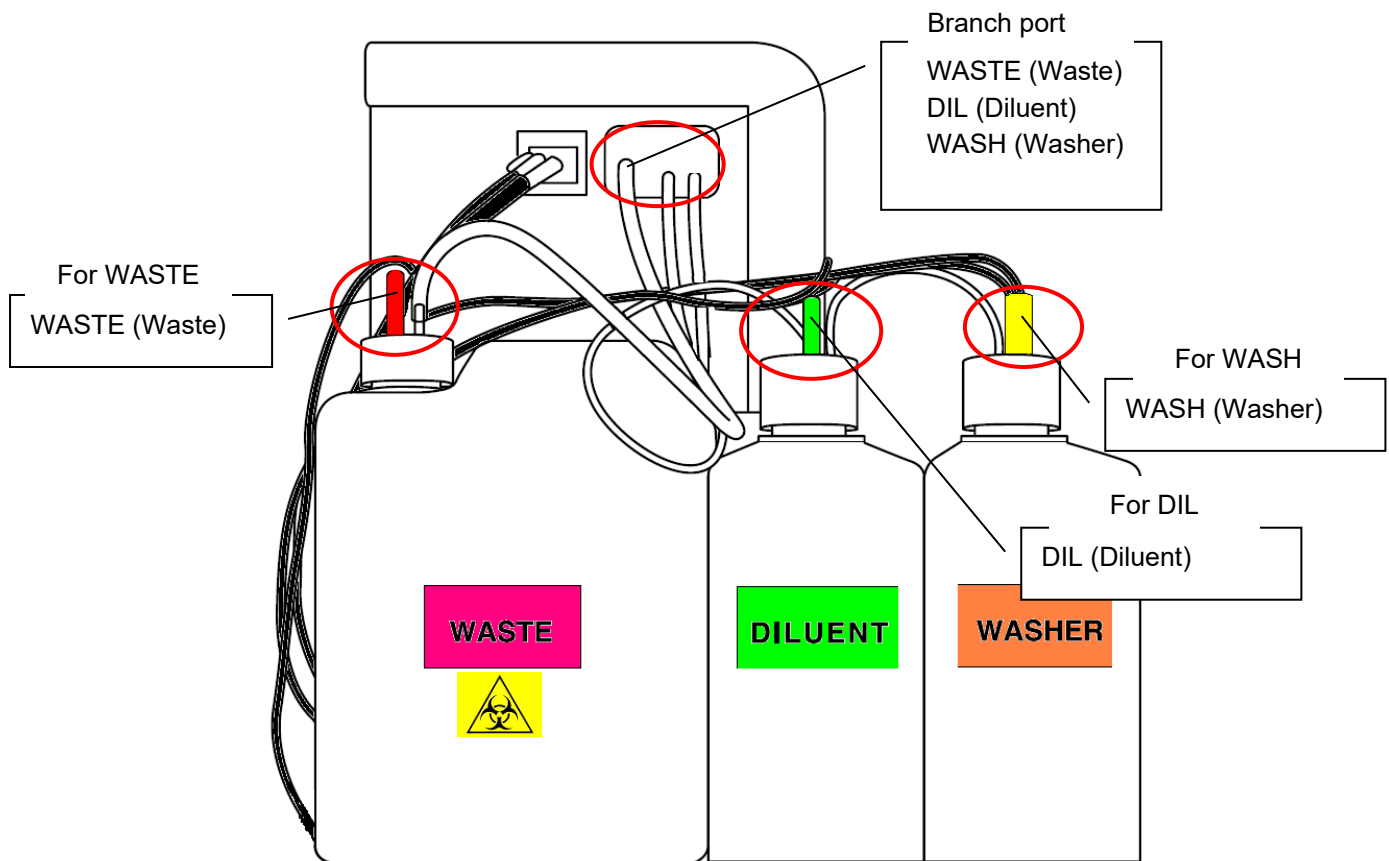
4.5. Installation Procedures

4.5.1. Installing the Washer, Diluent, and Waste Tanks

Connect the tubes attached to the branch port on the instrument's left side to the cap of each tank correctly.

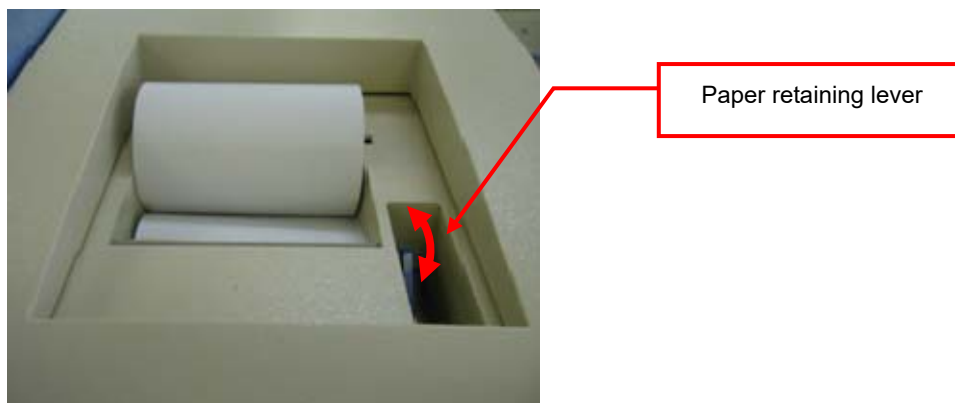
Regarding sensor installation, refer to "5.4 "Connecting the level sensor lead wire."

Regarding replacement of tanks, refer to "5.3 "Preparing the Washer, Diluent, and Waste Tank."

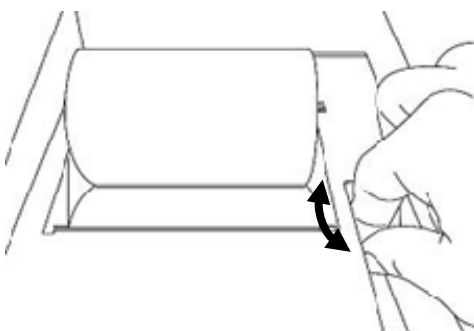


4.5.2. Preparing the printer paper

The instrument's built-in printer will print out assay results using a roll of thermal paper ("printer paper"). Procedures for installing printer paper are described below; insert the printer paper when the instrument is powered on. Make sure to use only designated AIA-900 printer paper.



- (1) Pull the paper retaining lever all the way forward.
- (2) Pull the mandrel of the printer paper upward and remove it.
- (3) Pass the mandrel through the center of a new printing paper roll, and set it in place while paying attention to the direction of the paper.
- (4) With the lever in the rearmost position, push in the end of the printer paper from the bottom of the roller. Once the end of the paper has been inserted, it will be automatically fed.
- (5) Check the paper for skewing. If it is skewed, pull the paper retaining lever forward, then adjust the end of the paper so that it is straight, and return the lever once again.



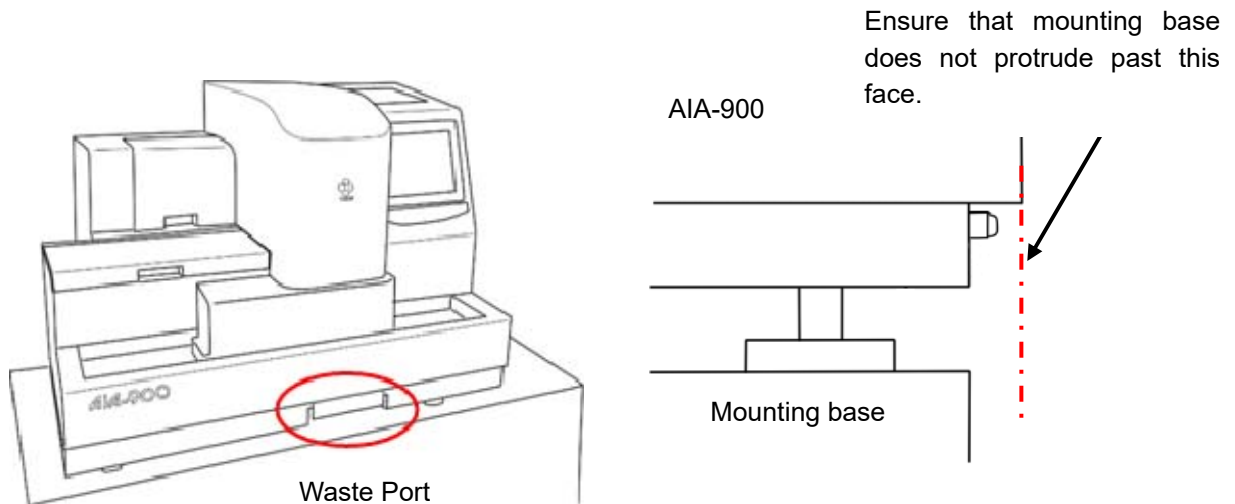
The lever moves in two steps, so be sure to return it fully to the rear. If you do not return the lever fully, the message "6200 printer is not set." will appear.

Section 4 Installation

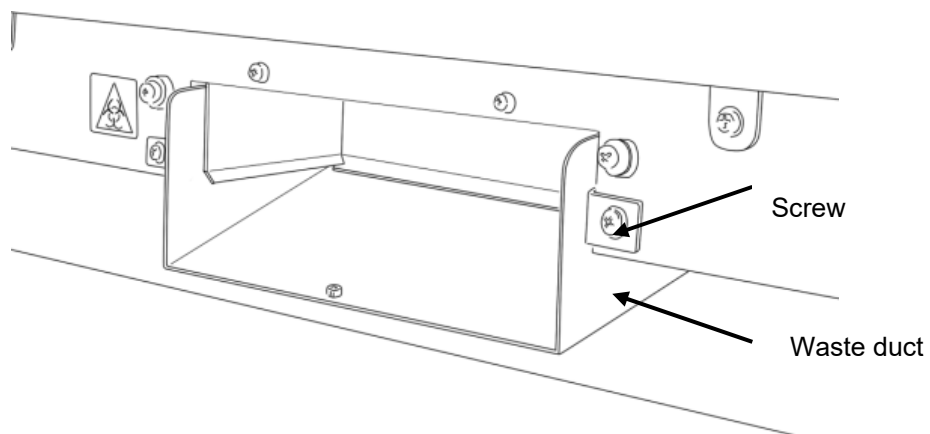
4.5.3. The Waste Box, Waste Bag, and Duct Chute Installation (when not using the analyser-stand)

Install the Waste Box and Waste Bag for discarding the test cups and tips, and the Duct Chute for preventing contamination of the Waste Port.

- (1) As shown below, install the instrument on the mounting base so that there is enough space not to interfere with the installation of the Waste Duct..

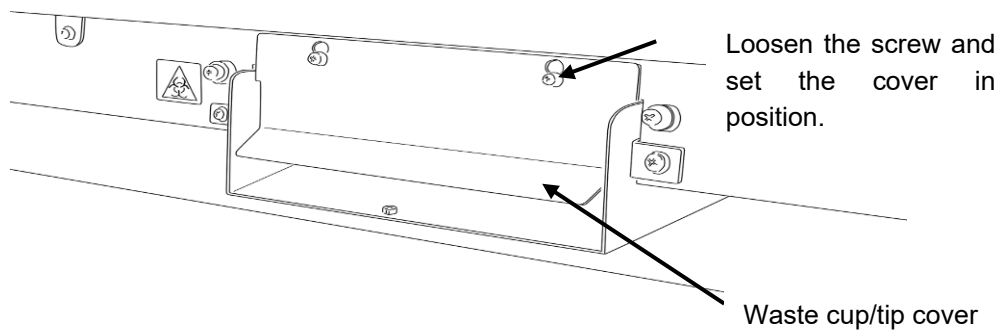


- (2) Install the Waste Duct as shown below and fix it in place by using screws.

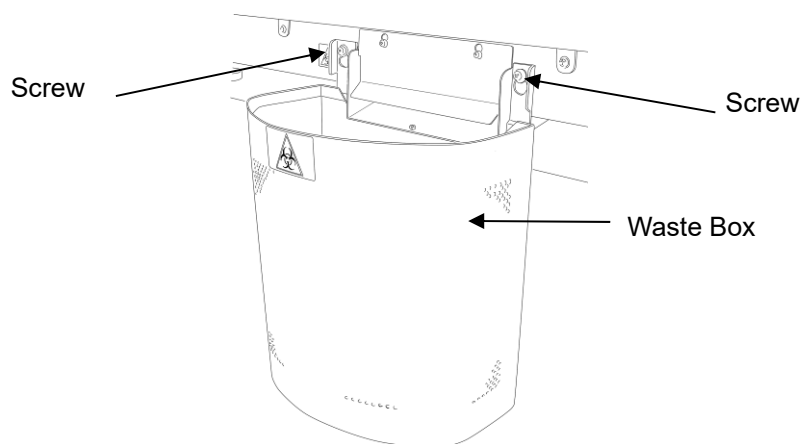


Section 4 Installation

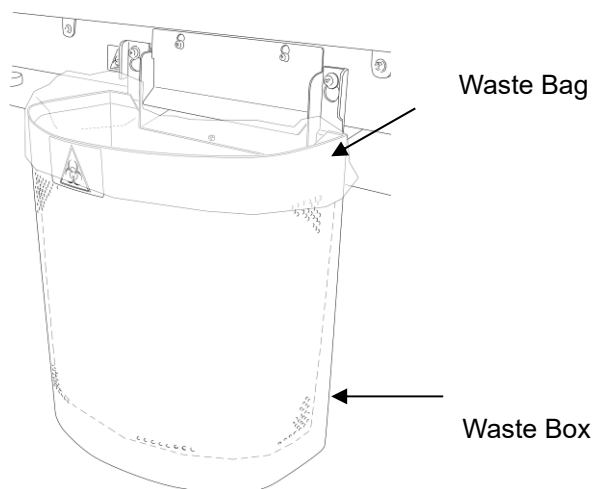
- (3) Using the screws, fix the waste cup/tip cover.



- (4) Loosen the screws on the side of the Waste Duct, install the Waste Box, and then re-tighten the screws.

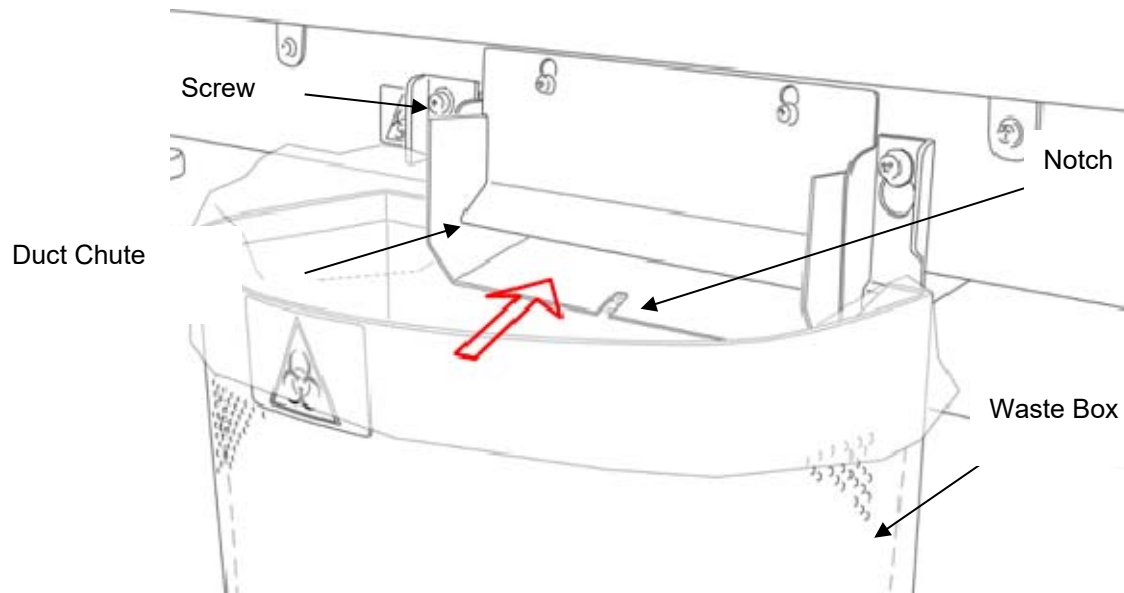


- (5) Install the Waste Bag in the Waste Box.



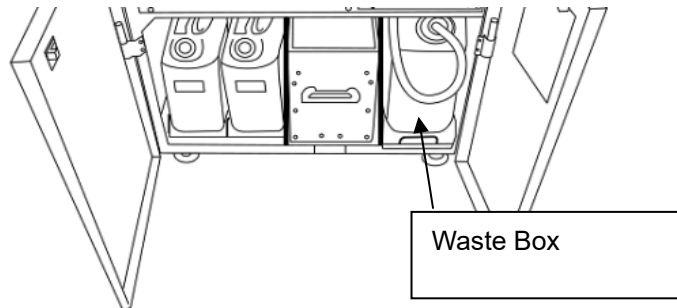
Section 4 Installation

- (6) Fully insert the Duct Chute into the Waste Duct so that the notch in the Duct Chute engages with the screw on the Waste Duct.



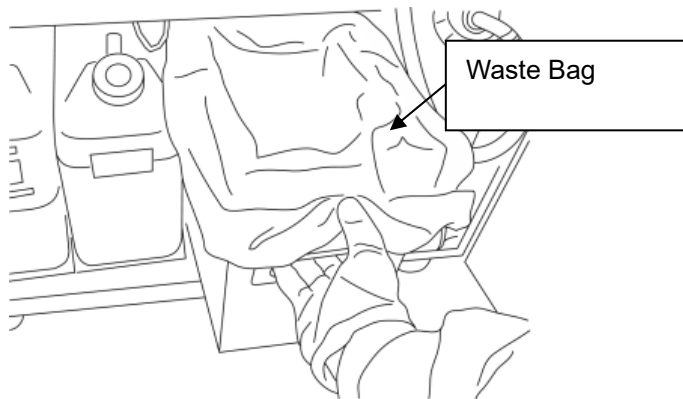
4.5.4. Waste Box and Waste Bag (when using the analyser-stand)

- (1) Open the front doors of the Analyser-stand.



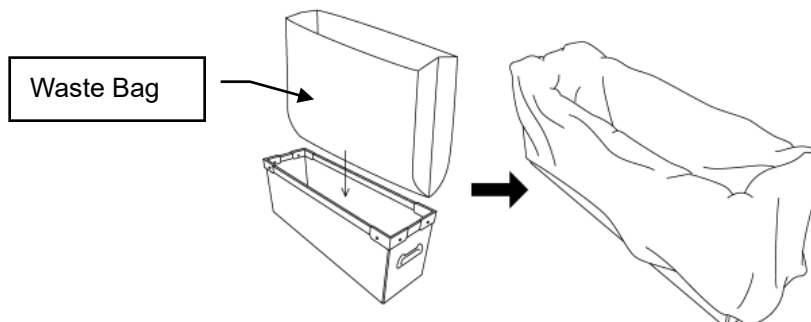
Be sure to wear gloves when discarding waste fluid, used tips and test cups in the Waste Bag. This is to prevent the risk of infection.

- (2) Pull out the Waste Box.



- (3) Discard waste cups and waste tips together with the Waste Bag. For safe waste disposal, it is recommended that each laboratory complies with established laboratory procedures and local, state, and federal regulations.

- (4) Place a new Waste Bag in the Waste Box, and return the Waste Box to its original position.



- (5) Close the front doors of the Analyser-stand.

Section 4 Installation

4.5.5. Connecting the Power Cable

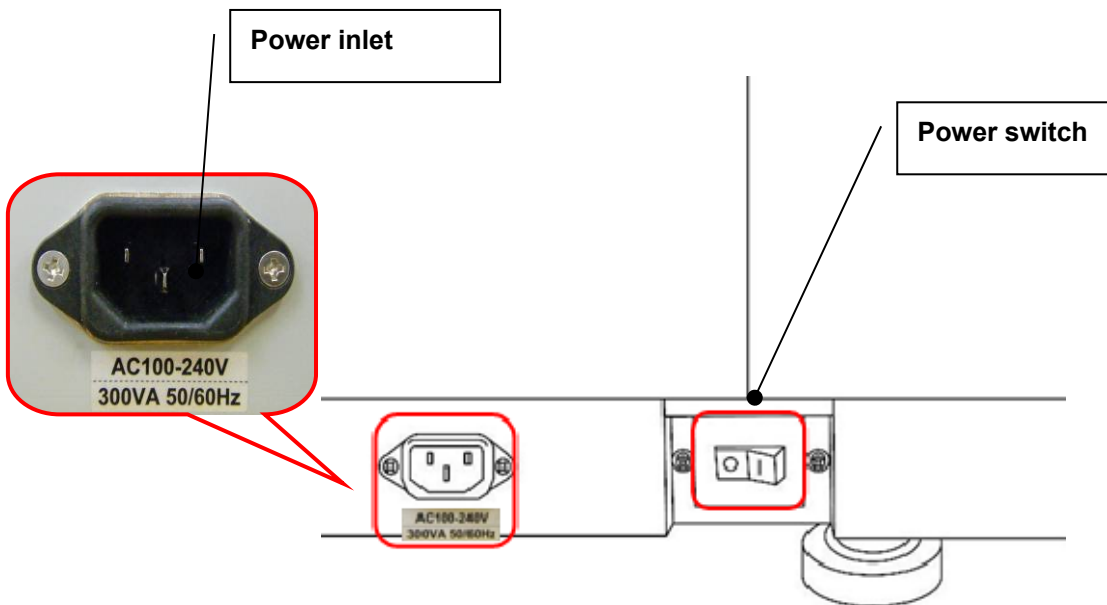
(1) The power source specifications for the instrument are described below. Ensure that your power outlet meets these specifications.

Power source specifications: 100 – 240 V ac
300 VA
50/60 Hz



- Connect the AIA-900 to a grounded power supply socket using the supplied power cable (capacity of at least 10 A).
- Do not connect the AIA-900 to a power source that is also used to run a large machine (e.g. refrigerator, compressor, etc.).
- A circuit protector is used in the power line.

(2) Confirm that the power switch on the near left side of the main unit is OFF, and then plug the power cable into the power inlet.



Plug the power cable firmly all the way to the bottom of the power inlet.



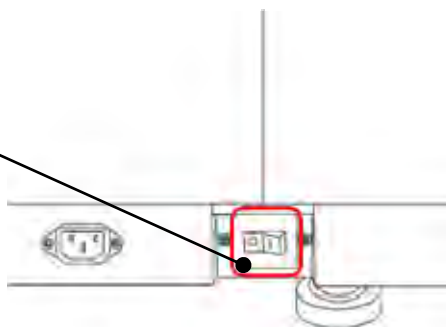
The “O” mark on the power switch means OFF, and the “I” mark means ON.

Section 5 System Preparations

5.1. System Start-up

- (1) Turn ON the power switch on the near left side of the main unit to start the instrument.

Power switch



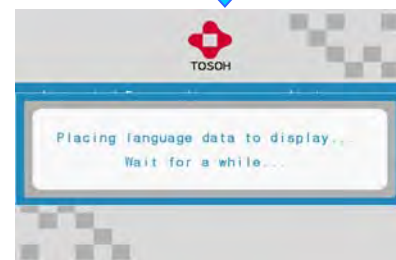
Note

“O” on the power switch means OFF, and “I” means ON.

- (2) When the instrument is switched ON, a message indicating that the program is being loaded appears, and then the OPENING screen appears, and the initial operation takes place.



Generally installation of a newly delivered AIA-900 is performed by qualified Tosoh service personnel. Customers are asked to refrain from unpacking and installing the system themselves.



5.2. Method of preparing the Diluent, Washer and Substrate

For preparation, please refer to the IFU of the reagent.

5.3. Preparing the Washer, Diluent, and Waste Tank

5.3.1. Installation of the Washer, Diluent and Waste Tank (when installing on the main unit)

Install the Washer Tank, Diluent Tank and Waste Tank as shown below.

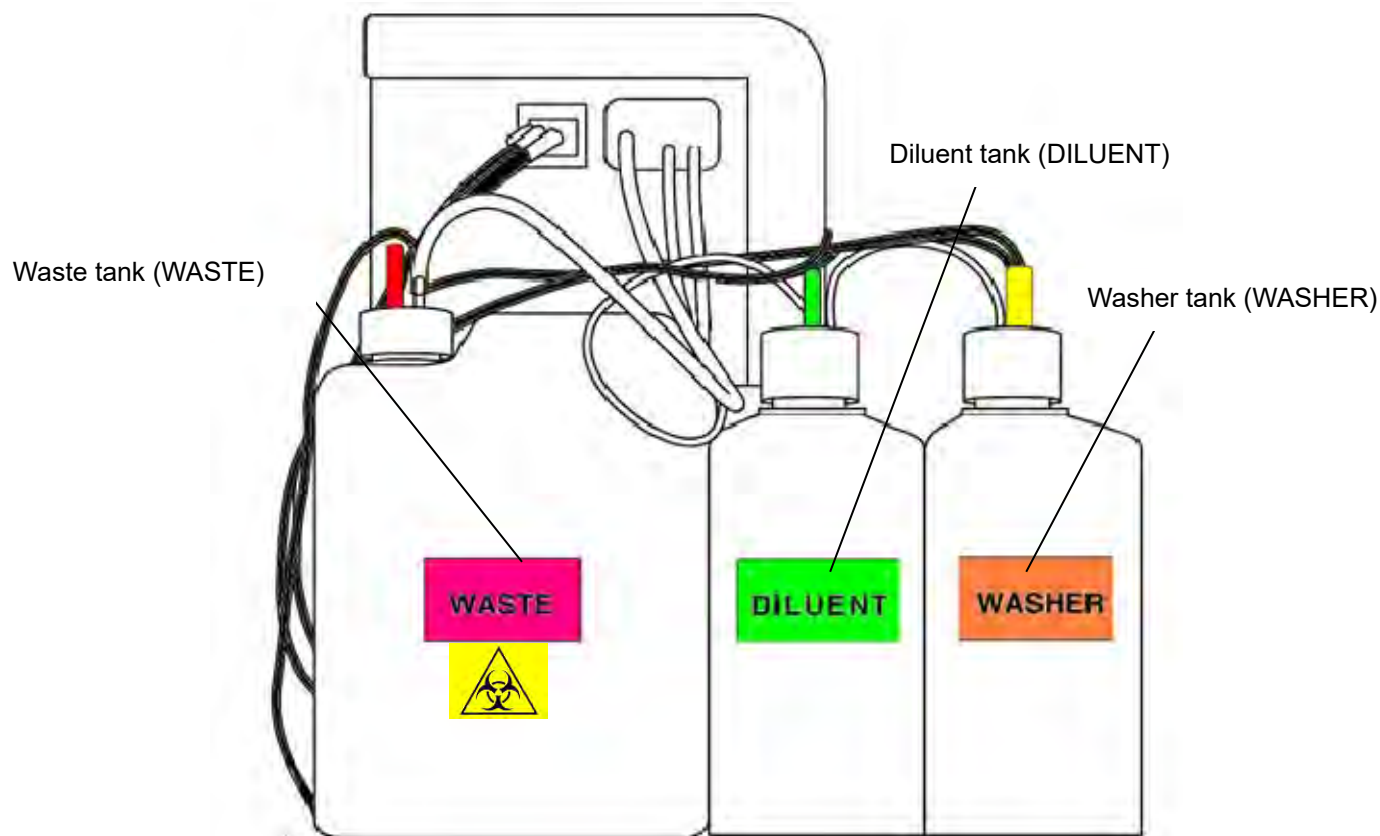


The Washer Tank and the Diluent Tank have the same shape. Each tank has an identification mark on it, so take care not to mix up the tanks when adding liquid to them. (Washer Tank: Orange mark, Diluent Tank: Green mark)

Likewise, install the cap with a sensor of each dedicated tank on the correct tank. If the Washer cap and Diluent cap are mixed up it will cause inconsistent assay results.

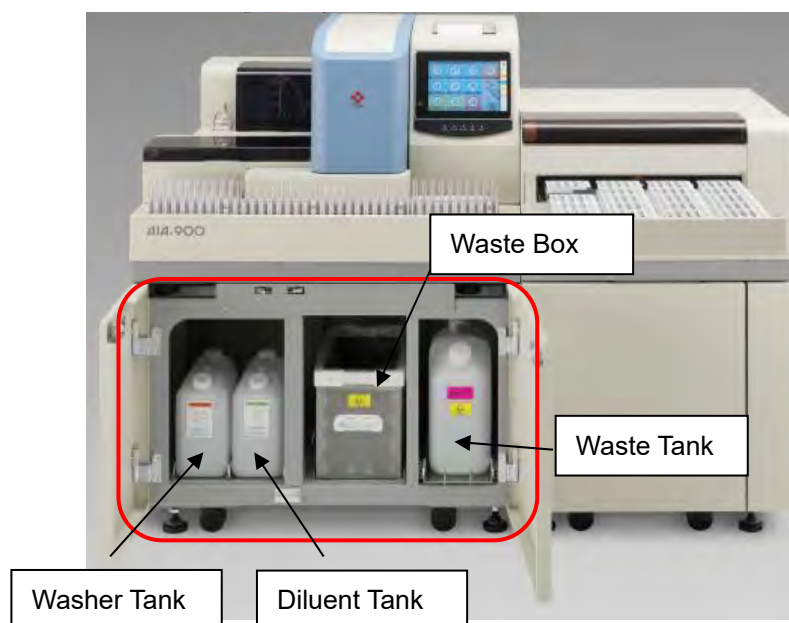
Before preparing the Washer and Diluent, carefully read the instructions accompanying each liquid. If you make an error in preparation, you will be unable to obtain correct assay results.

The capacity of the Waste Tank is 2 L. Before carrying out the assay, be sure to empty the tank.



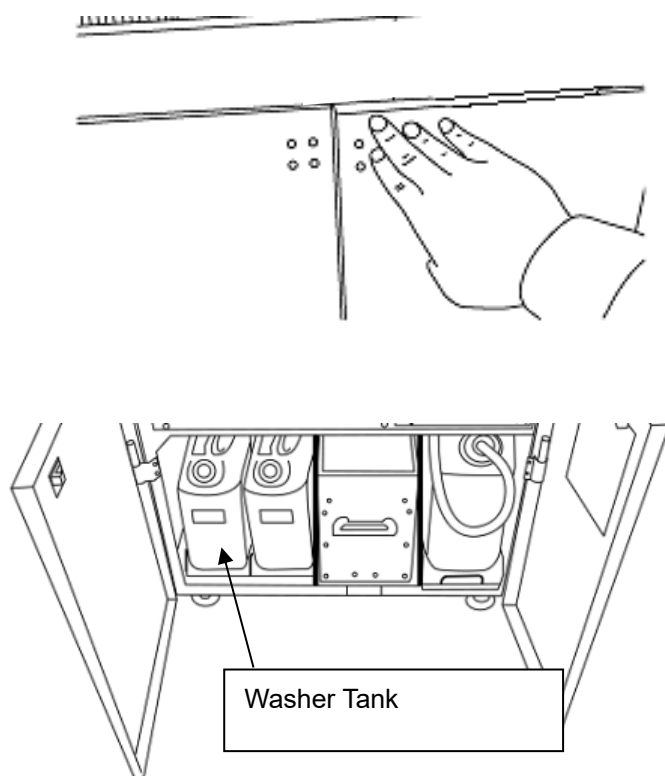
5.3.2. When Using an Analyser-stand

The method of placing the Washer Tank, the Diluent Tank, the Waste Tank, and the Waste Box is shown below.



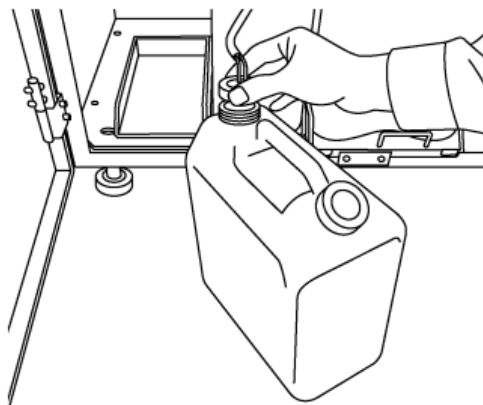
- **How to place the Washer Tank**

(1) Push the front doors of the analyser-stand to open them.



Section 5 System Preparations

(2) Take out the Washer Tank and remove the cap.



The tanks for the Washer and the Diluent have the same shape. Each tank has an identifying mark on it, so take care not to mix up the tanks. If the tanks are mixed up, you will be unable to acquire correct results.



After taking out the suction tube, place its end in a suitable container so that the Washer does not spill into the AIA-900. Failure to heed this precaution may result in an electric shock or leakage current.

(3) Prepare the Washer according to the instructions attached to the Wash concentrate.



When preparing the Washer, thoroughly mix the wash concentrate and purified water. If the liquids are inadequately mixed, a concentration gradient may occur in the tank, resulting in non-uniform data.

(4) Install the cap on the tank.

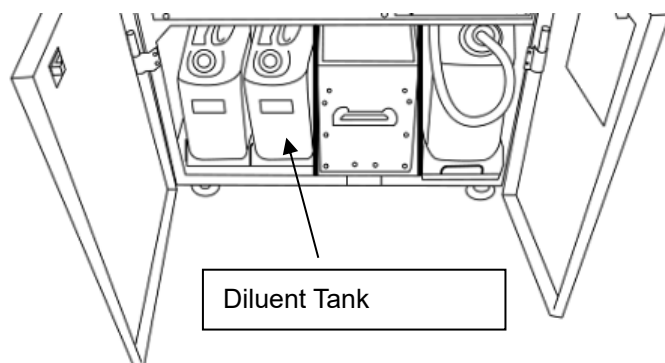
(5) Return the tank to its original position.

(6) Close the front doors of the analyser-stand.

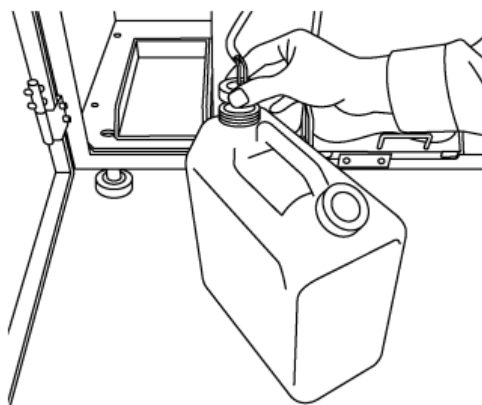
Section 5 System Preparations

- How to place the Diluent Tank

(1) Push the front doors of the analyser-stand to open them.



(2) Take out the Diluent Tank and remove the cap.



The tanks for the Washer and the Diluent have the same shape. The Diluent Tank has a green identifying mark, so take care not to mix up the tanks. If the tanks are mixed up, you will be unable to acquire correct results.



After taking out the suction tube, place its end in a suitable container so that the Diluent does not spill into the AIA-900. Failure to heed this precaution may result in an electric shock or leakage current.

(3) Prepare the Diluent according to the instructions attached to the Diluent concentrate.



When preparing the Diluent, thoroughly mix the diluent concentrate and purified water. If the liquids are inadequately mixed, a concentration gradient may occur in the tank, resulting in non-uniform data.

(4) Install the cap on the tank.

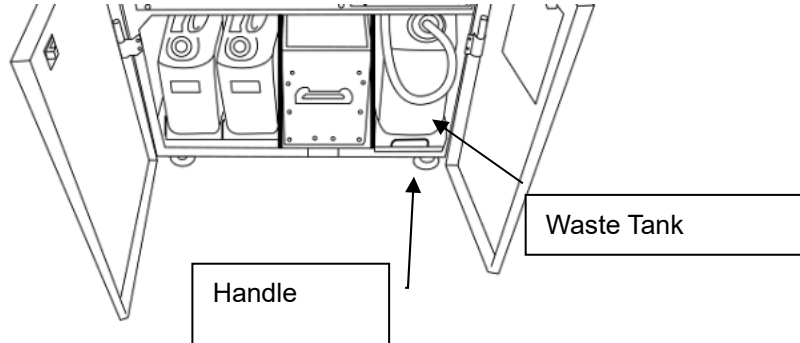
(5) Return the tank to its original position.

(6) Close the front doors of the analyser-stand.

Section 5 System Preparations

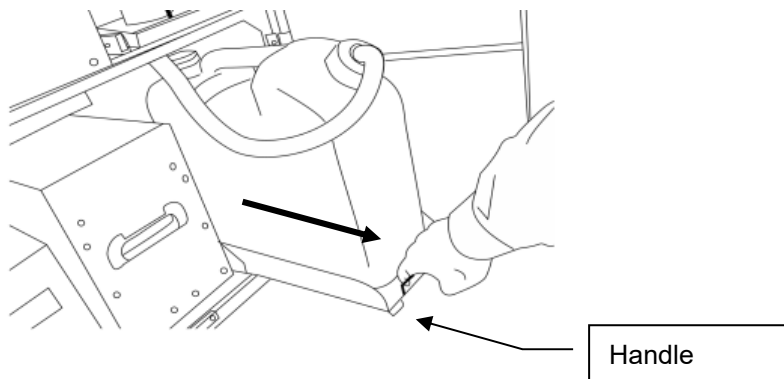
- **How to Set the Waste Tank**

(1) Open the front doors of the Analyser-stand.

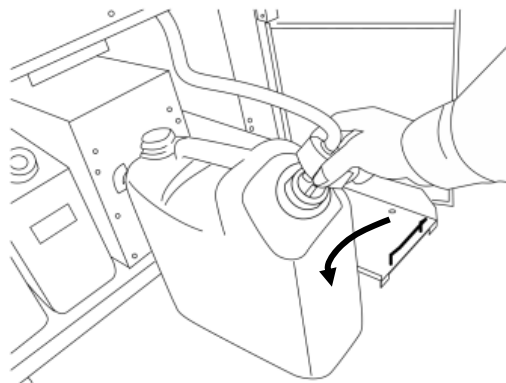


Be sure to wear gloves when discarding waste fluid, used tips and test cups in the Waste Bag. This is to prevent the risk of infection.

(2) Grasp the handle, and pull it toward you.



(3) Place the Waste Tank on the floor. Waste fluid accumulated in the tube will flow into the Waste Tank.





If the cap is removed from the Waste Tank without placing the tank on the floor, the waste fluid accumulated inside the tube may spill out. The waste fluid is contaminated by specimen. When handling or disposing of it, wear gloves and take care that the liquid does not get into contact with your skin because this may result in infection.

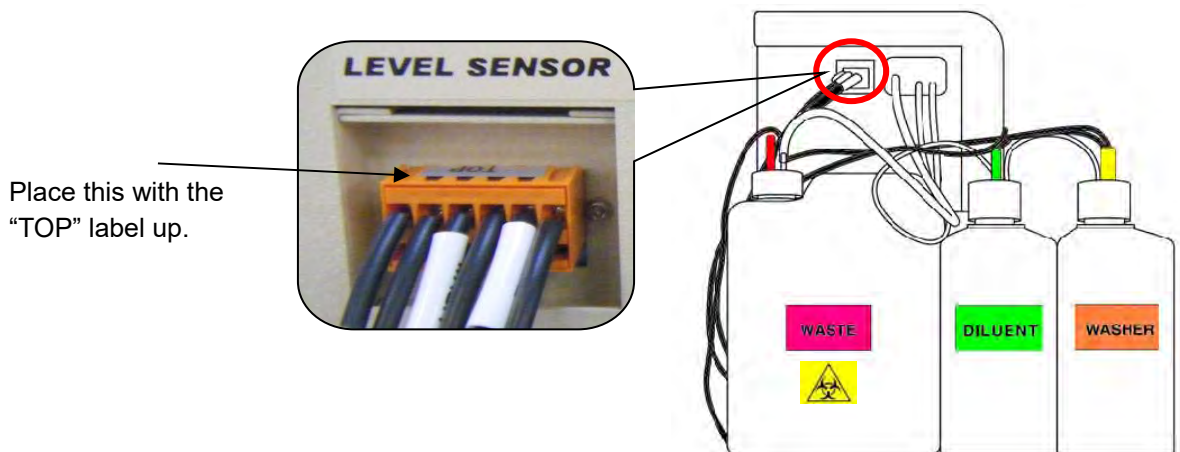
After disconnecting the tube, place the end of the tube in a suitable container to ensure that the waste fluid does not spill into the AIA-900.

Failure to heed this precaution may result in an electric shock or leakage current.

- (4) Remove the cap from the Waste Tank.
- (5) Discard the waste fluid. For safe waste disposal, it is recommended that each laboratory complies with established laboratory procedures and local, state, and federal regulations
- (6) Install the cap on the empty Waste Tank.
- (7) Return the Waste tank to its former position.
- (8) Close the front doors of the Analyser-stand.

5.4. Connecting the level sensor lead wire

- (1) Insert the plug with the level sensor lead wire into the socket.

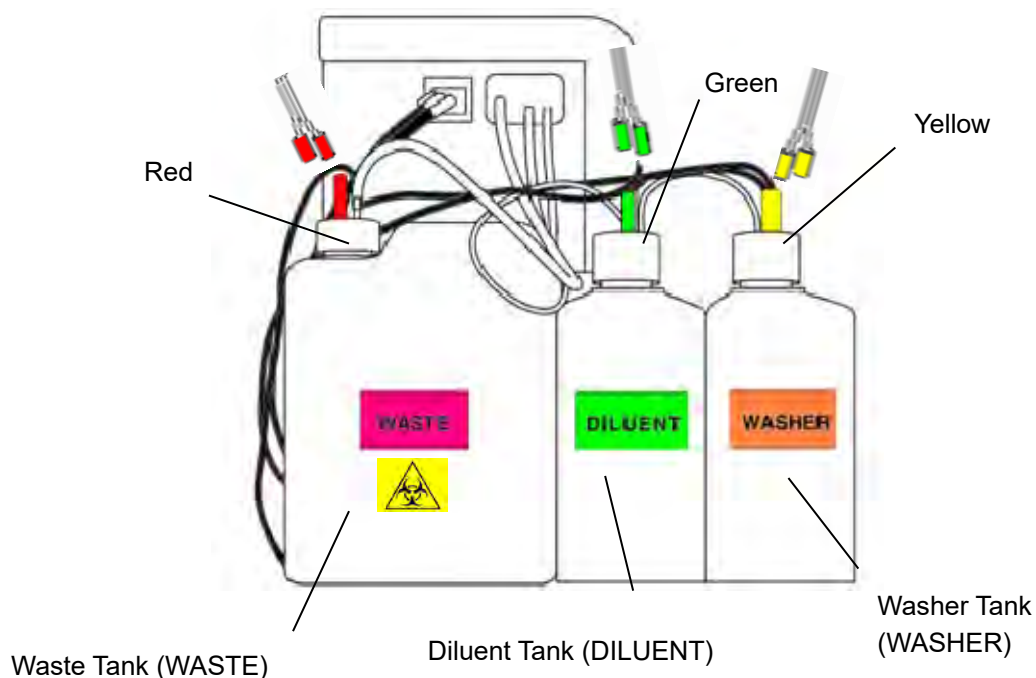


- (2) Connect the lead wire terminals from the level sensor to the electrodes of each tank; making sure to match the colours of the terminals with those of the electrodes.

Waste Tank (WASTE)	→	Red
Washer Tank (WASHER)	→	Yellow
Diluent Tank (DILUENT)	→	Green

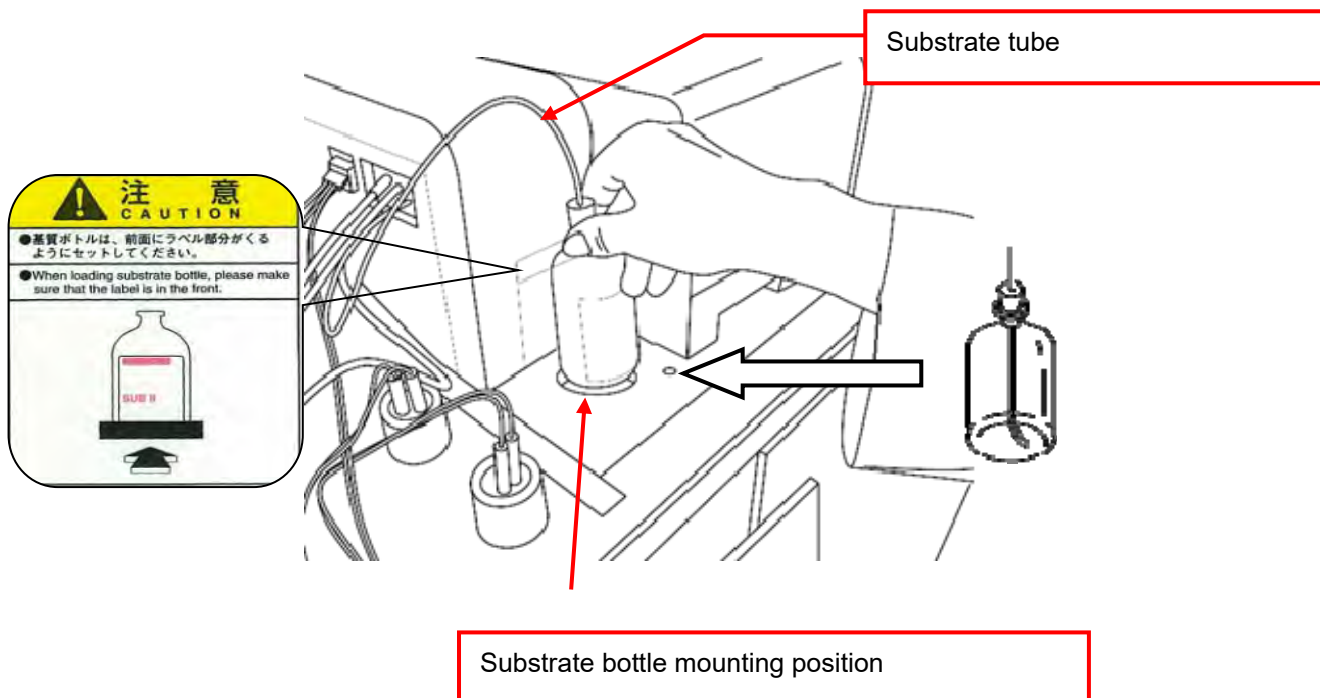


If you make wrong connections, the Diluent or Washer “LOW” alarm or the Waste Tank “FULL” alarm will not be emitted.



5.5. Preparing the Substrate

5.5.1. Installing the Substrate bottle



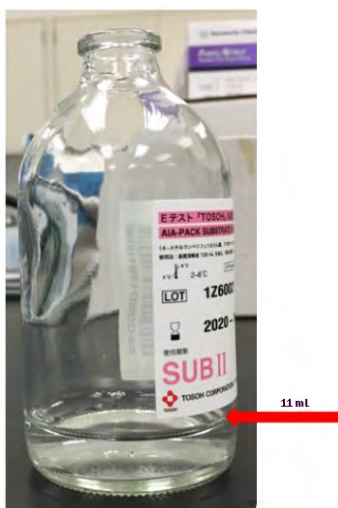
- (1) Prepare the Substrate according to the instructions for use.
- (2) Install the Substrate bottle on the Substrate bottle mounting position



Set the Substrate bottle with the label towards you. The amount of the Substrate remaining in the bottle is monitored by an optical sensor, so if you set the bottle in a wrong way, a false detection may occur.



Be careful that the level of remaining substrate does not fall to 11 mm or below from the bottom of the Substrate bottle, so as not to cause a substrate deficiency during assays. This is just below the bottom of the label (please refer to below picture). Be sure the sip tube extends to the bottom of bottle.



A DL flag will be attached to the assay result if the substrate dispensing amount is insufficient. In that case, replace the empty Substrate bottle, replace the substrate solution remaining in the substrate line with new substrate solution. Then prime the system and measure the substrate background (or conduct a Daily Check), and re-run the three assays prior to the DL flag.

Section 5 System Preparations

(3) Insert the Substrate tube into the Substrate bottle, and install the silicone cap.



Insert the Substrate tube so that it reaches the bottom of the Substrate bottle. A DL flag will be attached to the assay result if the substrate dispensing amount is insufficient.

In that case, replace the empty Substrate bottle, replace the substrate solution remaining in the substrate line with the new substrate solution, prime the system and measure the substrate background (or conduct a Daily Check), then re-run the three assays prior to the DL flag.

70 % ethanol or 70 % isopropyl alcohol is used as a replacement fluid in the Substrate tube. Do not use heat sources near the tube, or where solvent vapours may be present.

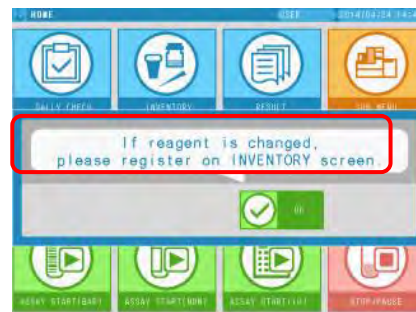
5.6. Preparing the Reagent vial

Place the sample diluting solution and pre-treatment reagent in the reagent rack.

- (1) Press the  key alongside the display.



When the  key is pressed, the reagent tip cover opens.



- (2) The RT. OPEN LED below the screen blinks for a while.
When the LED changes to a steady lit state, the cover is unlocked.

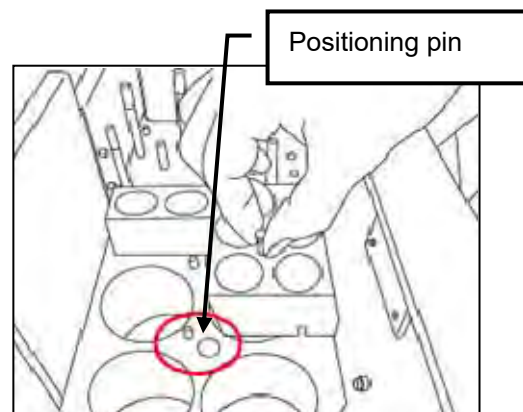


- (3) The message "If reagent is changed, please register on INVENTORY screen" appears.
(4) Open the reagent tip cover.

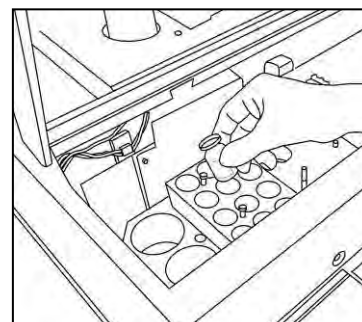
Note

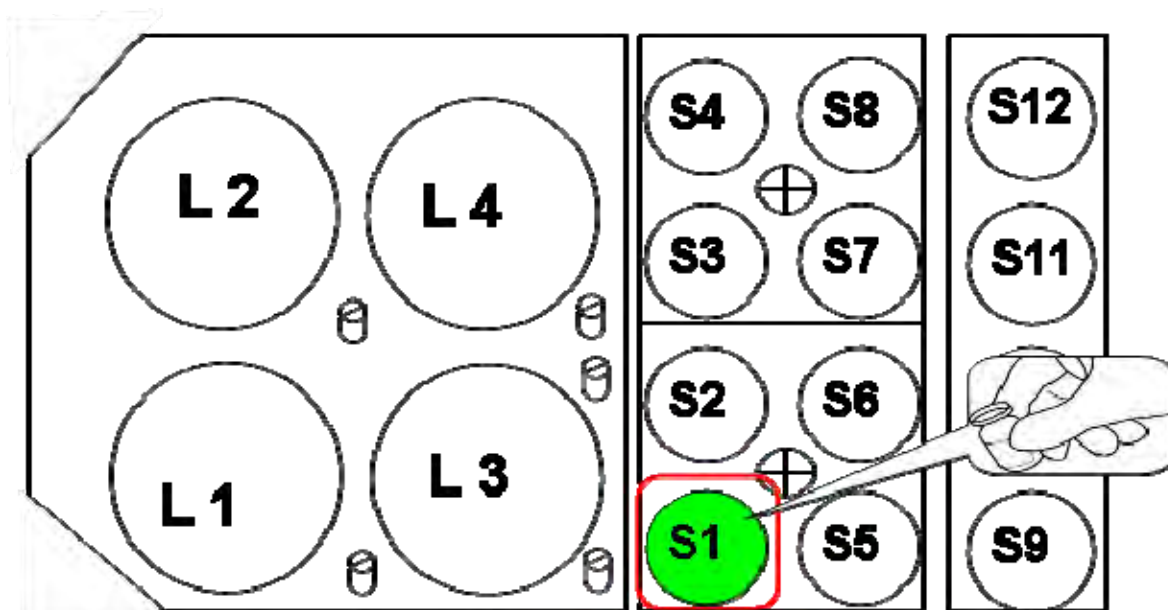
Only when the reagent tip cover is open, the information on reagents can be registered on the INVENTORY screen.

- (5) Align the reagent rack with the positioning pin.



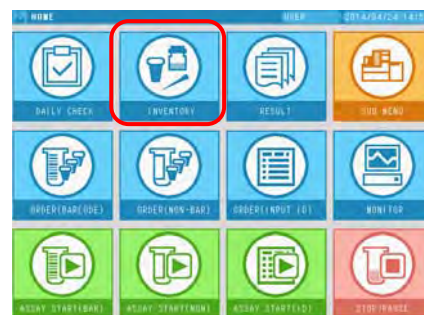
- (6) Set the reagent bottle of 100 ml (Sample diluting solution, etc.) or 5 ml vial.



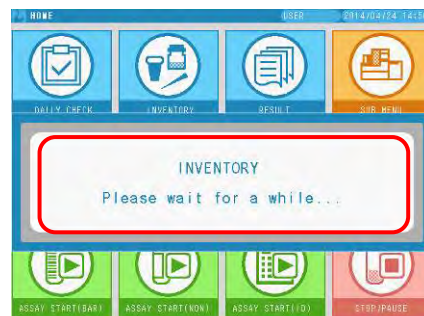


The procedure of setting a 5 mL vial at S1 is described in the following example (for AFP sample diluting solution lot 003).

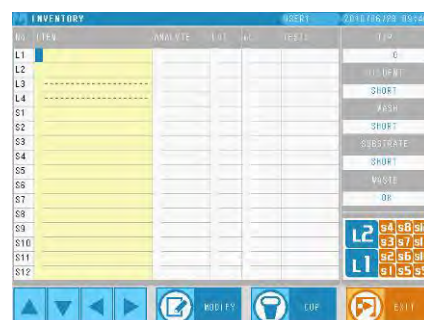
- (7) After setting the vial at the position S1 on the reagent rack, press the  button on the home screen.



- (8) The message “INVENTORY Wait for a while...” appears.



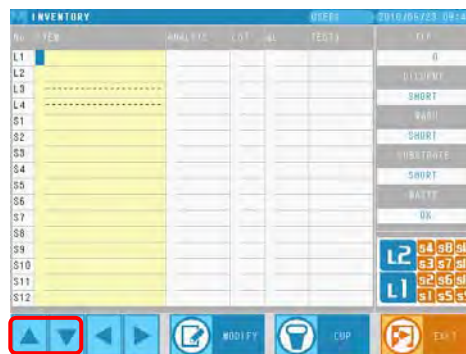
- (9) The INVENTORY screen appears.



Section 5 System Preparations

- (10) Move the cursor to the position where the reagent (sample diluting solution, etc.) of a 100 mL bottle or a 5 mL vial is set. Here, the 5 mL vial is set at S1, so move the cursor to

S1 by using the   keys.



- (11) Press the  button.



Unless the reagent tip cover is open, the message **“Reagent registration not available! Try again when reagent/tip cover is open”** will appear.



If you enter the reagent information in a wrong No., the assay may stop or wrong assay results may be output.



- (12) Press the button. 

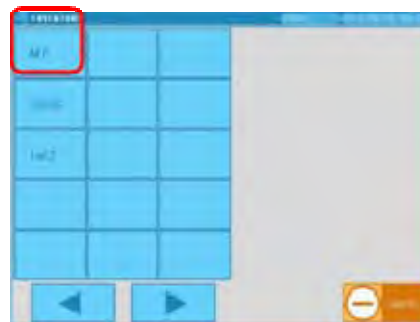


The INVENTORY screen will appear.



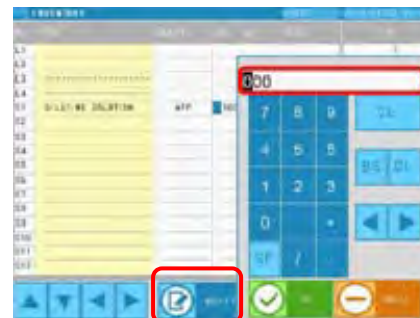
Section 5 System Preparations

(13) Select the  button.



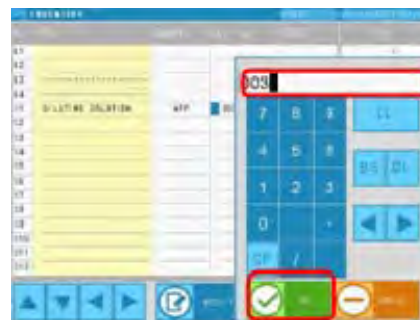
(14) AFP will be registered in the ANALYTE cell, and the cursor will move to the LOT cell.

(15) Press the  button.

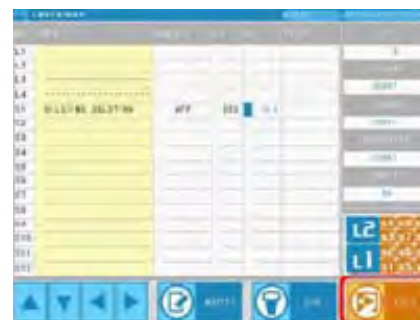


(16) Enter the lot No., and press the  button.

(17) Registration of the reagent (sample diluting solution, etc.) 5 ml vial is completed.



(18) Press the  button.



Section 5 System Preparations

(19) The screen returns to the home screen.

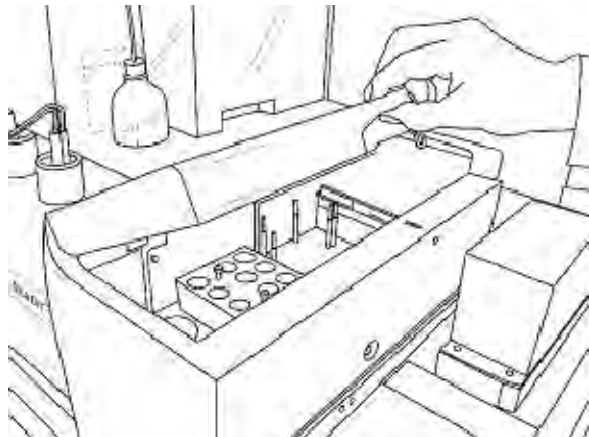


(20) Close the reagent tip cover.

When the cover is closed, the tips are automatically counted.



(21) The RT. OPEN LED blinks red for a while. Then, the LED goes out and the reagent tip cover is locked.



When you use a 100 mL bottle of sample diluting solution set it at the L1, L2, L3 or L4 position and register it.

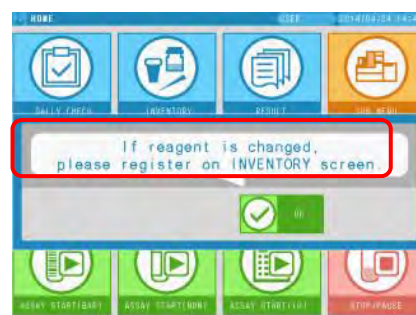
5.7. Preparing sample tips

Sample tips are used when dispensing specimens, reagents, etc. A maximum of 192 sample tips (96 sample tips x 2 racks) can be placed at a time.

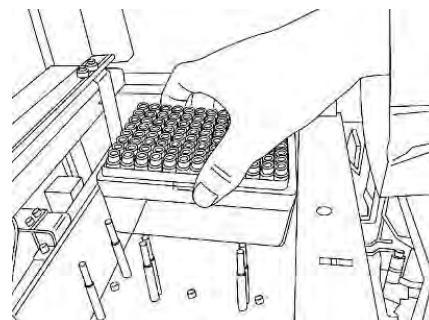
- (1) Press the  key alongside the display.



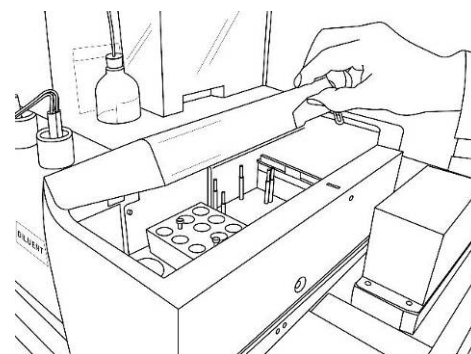
When the  key is pressed, the reagent tip cover opens.



- (2) The RT. OPEN LED blinks green for a while.
 (3) When the green LED lights, the cover is unlocked.
 (4) Open the Reagent and tip cover.
 (5) Remove the tip rack, and place sample tips in the rack.
 One rack can hold 96 sample tips.



- (6) Align the tip rack with the positioning pin. A maximum of two racks can be set in the tip drawer (total of 192 tips).
 (7) After setting the tip rack, close the Reagent and Tip cover. Then the tips are automatically counted.
 (8) The RT. OPEN LED blinks red for a while. When the LED goes out the Reagent and Tip cover is locked.

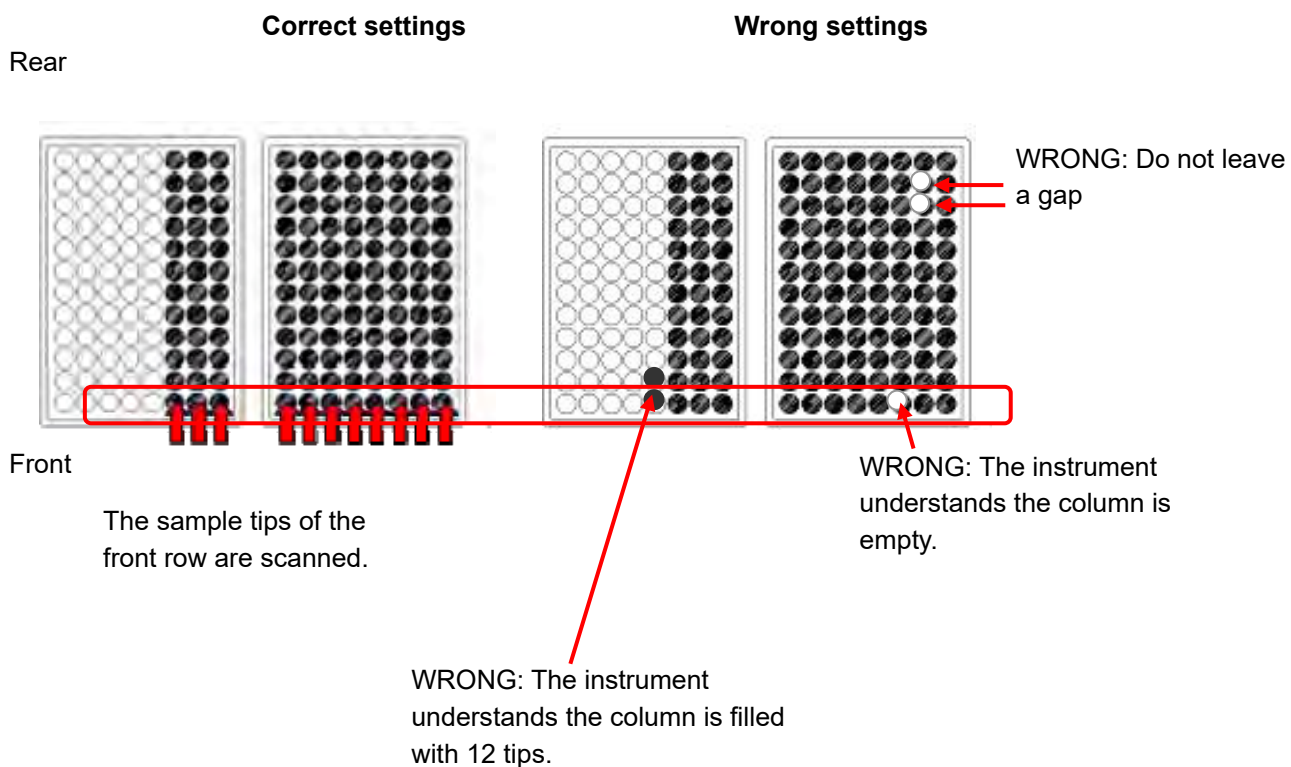


Section 5 System Preparations



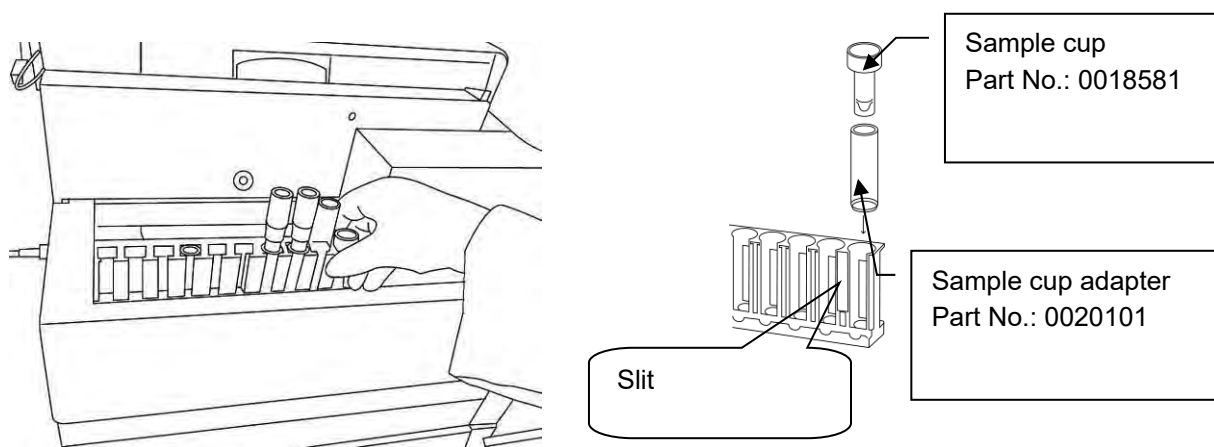
After the Reagent and tip cover is closed, the sample tips of the front row (the lowermost row in the below figure) are automatically detected with the front sensor.

If there is a tip at the front in a column of the rack, the instrument will understand that all the holes in that column are filled with 12 tips. To avoid a tip pickup error, fill all holes of each column with tips.



5.8. Preparing the specimen

- (1) Leave the specimen in the primary tube, or dispense the necessary volume of the specimen to Tosoh's dedicated sample cup, and then place the primary tube or the sample cup in the sample rack.
When using a sample cup, put the sample cup into a dedicated sample cup adapter and set them in the sample rack.
- (2) Set the sample rack on the left side of the sample loader while keeping the slit of the rack towards you and slide it away from you.
- (3) Set an Endmarker in the rack or put another empty sample rack on the loader.



The dead volume of Tosoh's dedicated sample cup is 100 μ L.
The dead volume of a round bottom straight primary tube is approximately 500 μ L.

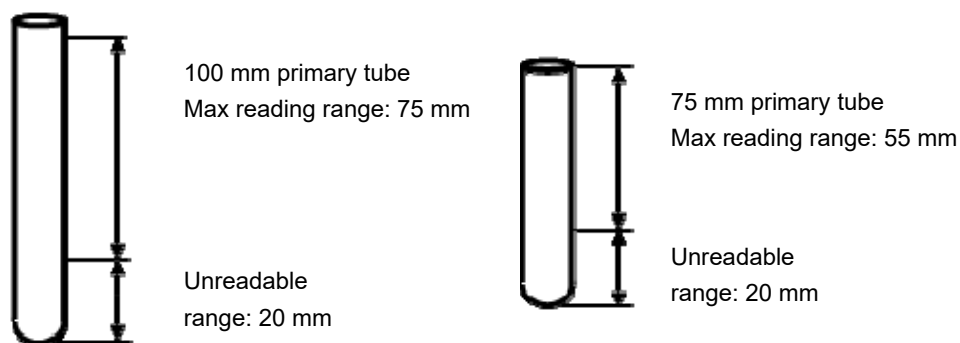


There is a possibility that a tapered primary tube will not function. Please consult a Tosoh local representative about the shape of primary tubes available for the instrument.

If a barcode label on a primary tube is used in the rack, set the label towards you through the slit of the rack.

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The reading range of the barcode scanner is indicated below. Affix a barcode label in that range. Note that if the barcode label is dirty, wrinkled, or affixed at an angle, it will be difficult to be read.



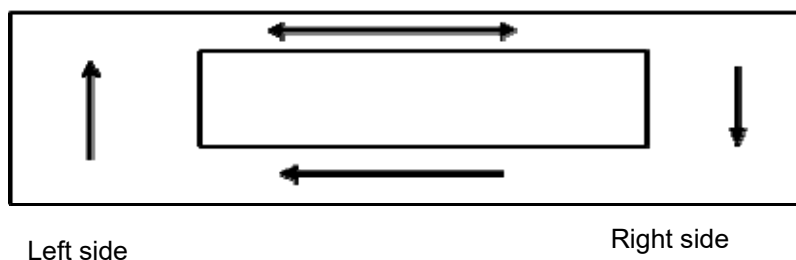
Note: The reading range includes the barcode margin (quiet zone).

Note

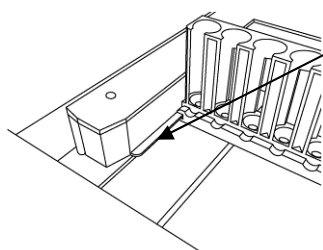
The sample rack moves in the directions indicated by the following arrows on the sample loader.

Rear side

Front side



A guide plate preventing the sample rack from toppling is installed in the side of the sample loader. Set the sample rack so that the groove on the side of the sample rack slides along the guide plate. Unless the guide plate is inserted in the groove, the sample rack will not move normally.



Insert the groove of the sample rack in the guide plate.

Section 5 System Preparations

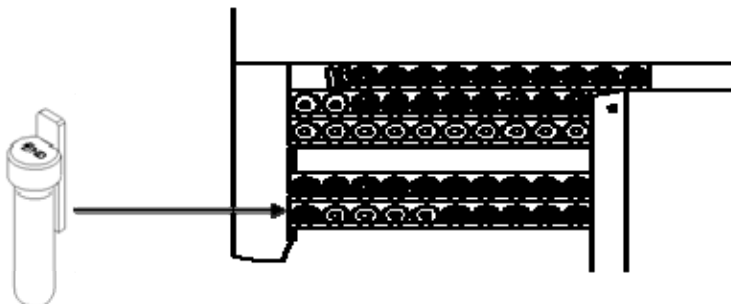
- (4) If you want to add other assays after you have started some assays, you should add the sample racks while the sample loader has stopped. The sample loader will stop after the previous sampling has finished. If you want to add sample racks before the previous sampling has finished, stop the sample loader by pressing the PAUSE button on the menu. (Refer to "8.5.4 How to STOP Assay, PAUSE/CONTINUE.")
- (5) Set another end marker or empty sample rack even in the case of adding sample racks.



If you add assays frequently, we recommend you set an end marker rather than an empty sample rack to make room for sample racks with specimens on the sample loader.



If you set a sample rack while the sample loader is moving, the sample rack may stop due to an error. Unless you set an end marker or an empty sample rack, the sample loader will not stop and the sample rack continues to circulate on the sample loader.



Endmarker
Part No.: 0022945

5.9. Setting the test cup tray in the sorter (when using the sorter)



The storage capacity of test cups differs between the 9tray Sorter and 19tray Sorter. Although the operations for 9tray Sorter is referred to in the following explanation, the ones for the 19tray Sorter are the same.

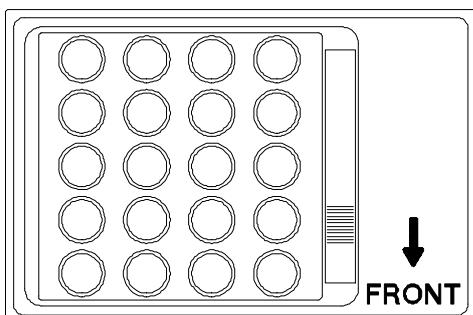
- (1) Press the Cup Sorter key on the Sorter to set the test cups. The LED of Cup Sorter key will blink green for a while. The LED will light green when the lock is released and it becomes possible to open the cup drawer.



- (2) Open the cup drawer.
- (3) Place the test cup trays in the cup drawer.



When placing the test cup trays in the cup drawer, set them so that the barcode label on the tray faces to the right (See the figures below). If a tray is incorrectly placed, the sorter will be unable to read the tray barcode and the tray will not be registered in the inventory.



Section 5 System Preparations

- (4) Push back the cup drawer until it completely returns inside. The barcodes on the trays will be scanned automatically and analytes, lot numbers and quantities of the test cups available will be registered. During scanning, the LED of the Cup Sorter key will blink red.



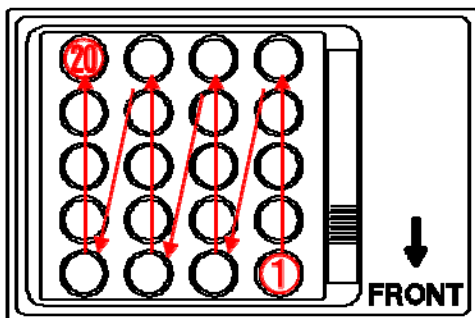
When the LED of the Cup Sorter key is lit red, the AIA-900 is dispensing a Conjugate or Pre-treatment reagent. Do not press the Cup Sorter key. Otherwise, the assay in process is skipped and you are not able to obtain the results.



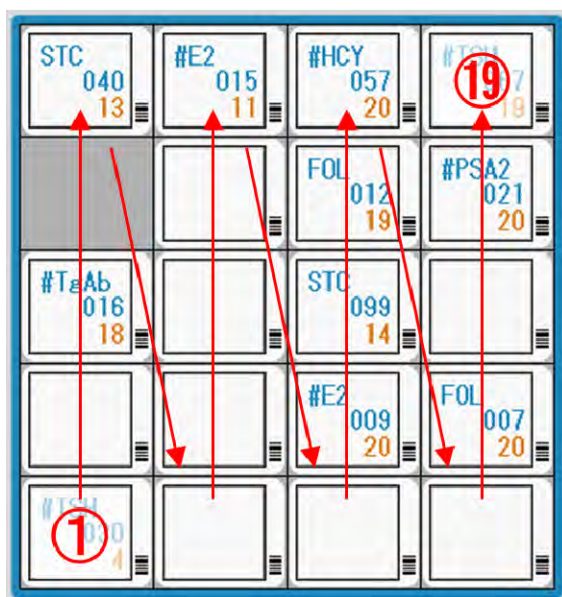
The analyte and lot information of a test cup is identified with the barcode on the test cup tray. In order to ensure accurate assay results, never move test cups to any other test cup trays.

5.10. The order of use of test cup trays and test cups in the sorter

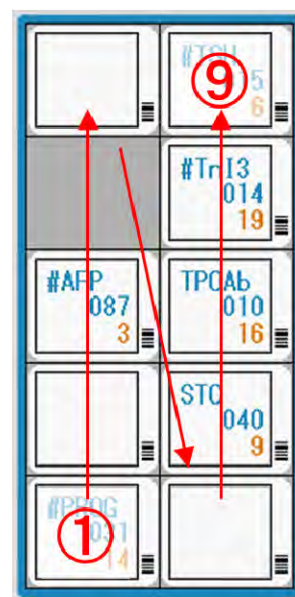
The following order is applied to use the test cups in test cup tray.



Additionally, the following order of use is applied for test cup trays with identical analytes in the sorter. The expiry date of a test cup or the calibration curve status (the remaining validity period, the lot or the existence/absence of the calibration curve) will not affect the order of use. If there is a test cup tray you want give priority for use, set the test cup tray at the position with a higher order.



19 Tray Sorter



9 Tray Sorter

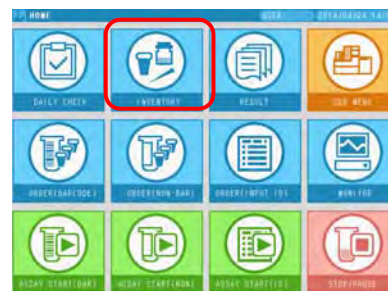
5.11. Inventory Check of the test cups remaining in the sorter

It is possible to check the analytes, lot numbers and quantities of test cups remaining in the sorter on the Inventory screen.



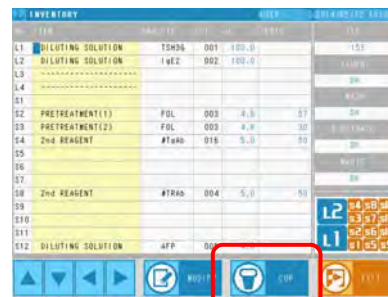
When you check an inventory, you need to set the sorter in use with the **USE** button on the SPECIFICATIONS screen. For details, refer to the **CUP SORTER** in the "10.7 SPECIFICATIONS."

- 1) Press the  button on the Home screen to display the Inventory screen.



- 2) Press the  button to display the Inventory (cup) screen.

- 3) Check if the required quantity of test cups is available.
* This screenshot example is for the 19tray Sorter.
When operating an instrument with a 9tray Sorter, 9 trays will be displayed.



The inventory of test cups becomes empty on the Inventory screen after changing from

NOT USE

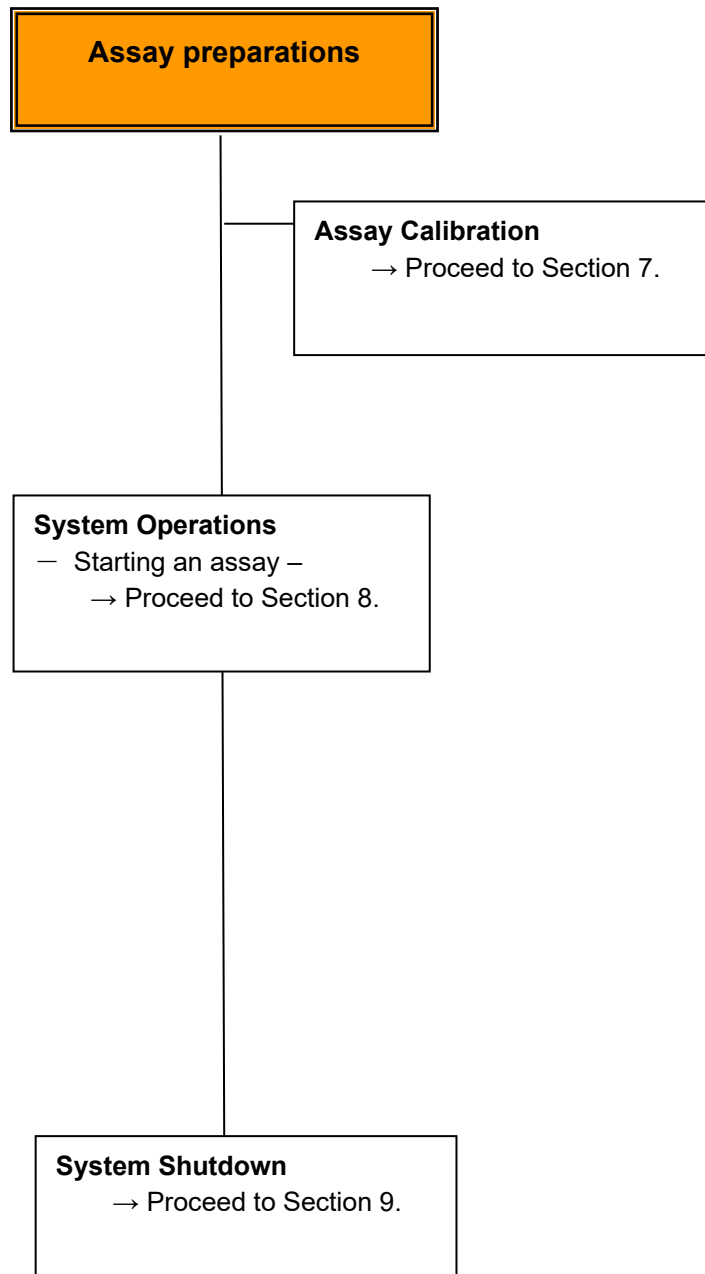
to **USE** on the SPECIFICATIONS screen.

To show the inventory, scan test cups on the sorter according to the "5.9 Setting the test cup tray in the sorter (when using the sorter)."



Section 6 Assay Preparations

6.1. Introduction



6.2. Before Starting an Assay

Before starting an assay, prepare the following.

- Test cup
- Substrate
- STD cup
- Diluent and Washer
- Samples (Patient Specimen, Calibrator, Control)



Prepare the Substrate, Diluent and Washer according to "5.2 Method of preparing the Diluent, Washer and Substrate" and their instructions for use.

Prepare samples according to the following instructions.

- 1) Patient specimen or control
- 2) Calibrator (Reference standard)

(1) Patient specimen or Control

Use the primary tube or dispense the required volume of a patient specimen or a Control to a sample cup. The required volume of the patient specimen includes the volume specified for each analyte and the dead volume.



Dead volume

The required volume of a specimen for the assays can be confirmed on the "WORK LIST" when creating the assay order. The "WORK LIST" shows the dead volume of the sample cup.

The dead volume of the sample cup is 100 µl, while that of the primary tube differs according to its I.D. and shape. The dead volume of a straight primary tube of 13 mm O.D. is approximately 500 µl.

Up to five analytes can be assayed for one specimen. Since STC cups are required for the automatic sample dilution and sample pre-treatment, this number of STC cups is included in the five. If the number of the required cups exceeds five, the specimen has to be divided into at least two sample cups or primary tubes.

When a 9tray Sorter is connected to the instrument, a maximum of 9 analytes can be assayed, even if there is analyte which requires sample dilution or sample pre-treatment. When a 19tray Sorter is connected to the instrument, a maximum of 19 analytes can be assayed, even if there is analyte which requires sample dilution or sample pre-treatment.

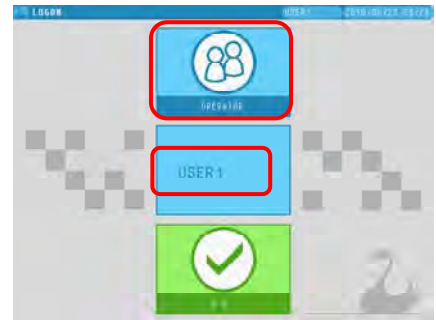
(2) Calibrator

Prepare calibrators and test cups. Refer to the IFU (Instructions for Use) of the calibrator set to be measured for their preparations.

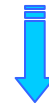
The required volume of a specimen for the assays can be confirmed on the "WORK LIST" when creating the assay order.

6.3. Checking and Selecting the Operator

- (1) Check the name of the operator on the login screen.



- (2) Confirm that the logged-on operator's name is displayed. Then press the  button.



- (3) If you want to change the operator, press the  button. The registered operator's names will be displayed, so move the cursor by pressing  buttons.

Press the  button to select the correct operator.



The logged-on operator's name will be printed on printout of measurement results.

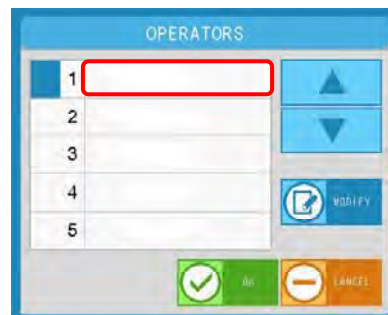
Section 6 Assay Preparations

Registering New Operator Name

You can register up to five operators.

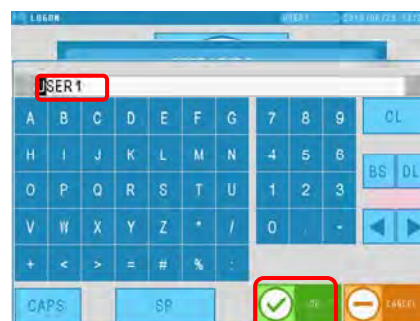
The registered operators' names are stored in the instrument even after it is switched OFF.

- (1) Press the  button.
The OPERATORS screen will appear.



- (2) Using  move the cursor to the number to be registered, and then press the  button.

The keypad screen will appear.

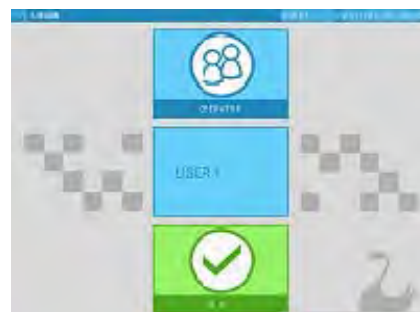


- (3) Enter the operator's name.
(maximum of 8 letters)

- (4) After entering the operator's name, press the  button to return to the OPERATORS screen.



- (5) Press the  button. The LOGON screen will appear.



Changing or deleting Operator Names

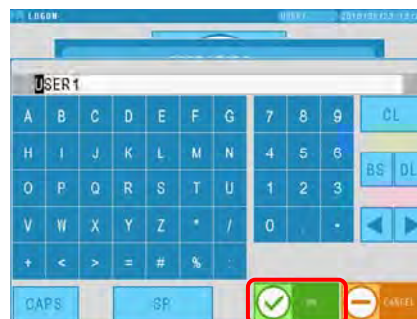
- (1) Press the  button.
The OPERATORS screen will appear.

- (2) Using , move the cursor to the number to be changed or deleted, and then press the  [MODIFY] button.

The alphanumeric keypad will appear.

- (3) Change or delete the operator's name by using .

- (4) When the name has been changed or deleted, press the  OK button.



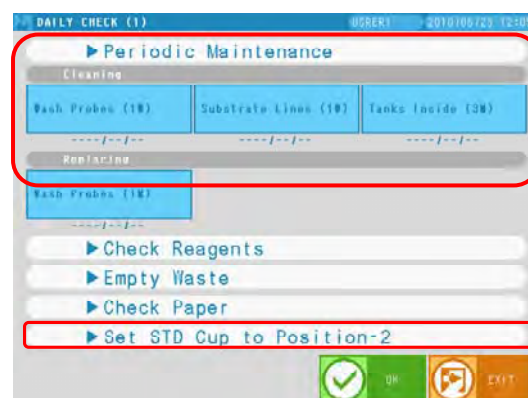
6.4. Daily Check (without a sorter)



- (1) Press the  button on the home screen.

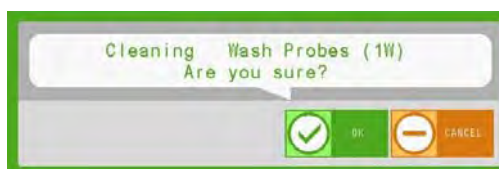
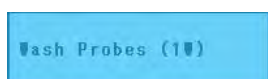


- (2) The DAILY CHECK screen will be displayed. Check the four items (Cleaning: Wash probes, Substrate lines and Tanks inside; Replacing: Wash probes) shown in pale blue. After checking each item, press the corresponding button (item) on the screen. The time and date of the checking will be recorded.



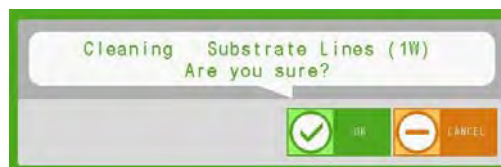
Note

If a deadline for cleaning or replacement of those parts has already passed, the previous check date for that part blinks. If a date is blinking, make sure to carry out the corresponding check and then update the matching check date. Regarding cleaning and replacing methods, refer to “Section 11 Maintenance”.



Clean the probe tip at the end of the wash probe.

For the method of cleaning and replacement, refer to “[Section 11 Maintenance](#)”. When you have finished cleaning, press the  button. The inspection date will be automatically updated.

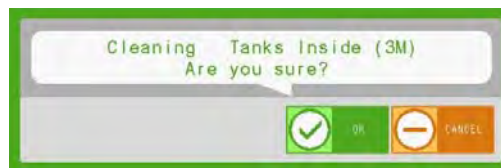


Replace the contents of the Substrate tube with 70% ethanol or 70% isopropyl alcohol. For the method of replacement, refer to “[Section 11 Maintenance](#)”. After finishing the

replacement, press the  button. The inspection date will be automatically updated.

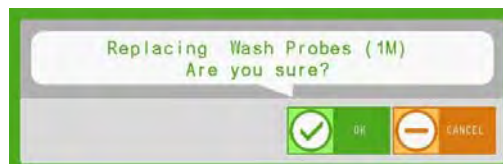
Section 6 Assay Preparations

Tanks Inside (3M)



Wash the inside of the Washer and Diluent Tanks. For the method of washing, refer to **“Section 11 Maintenance”**. After finishing the washing, press the  button. The inspection date will be automatically updated.

Wash Probes (1M)



Replace the probe tip at the end of the wash probe. For the method of replacement, refer to **“Section 11 Maintenance”**. After finishing the replacement, press the  button. The inspection date will be automatically updated.

(3) Check each item in the red rectangle on the right figure.



- Checking the reagent stock
Confirm that the remaining volumes of Diluent and Washer are enough.
Replace the 70% ethanol or 70% isopropyl alcohol bottle on the substrate installation section with a substrate bottle.
- Discarding waste liquid and used tips and cups
Discard the Waste liquid in the waste Tank. Discard the used tips and test cups in the Waste box.



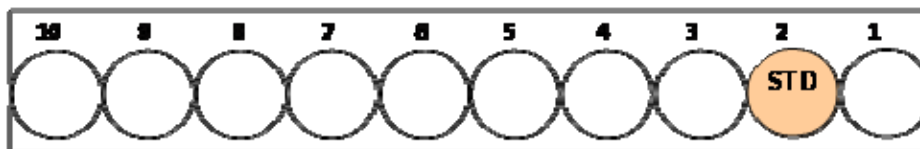
Be sure to wear gloves when discarding waste liquid and also used tips and reagent cups in the waste bag. This is to prevent the risk of infection.

- Checking the printing paper
Confirm that the remaining paper for recording is sufficient.

Section 6 Assay Preparations

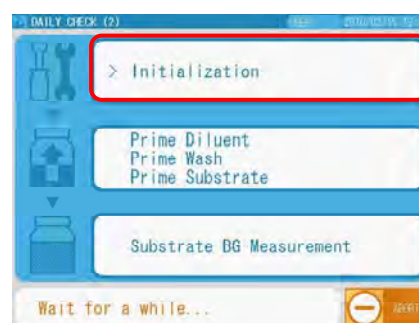
- Set STD Cup to Position-2

(4) Place one STD cup in a cup holder, and set the cup holder at position No.2 of the sample rack. When a sorter is used, the instruction “Set STD cup in the sorter” will appear, so place the STD cup in the sorter.

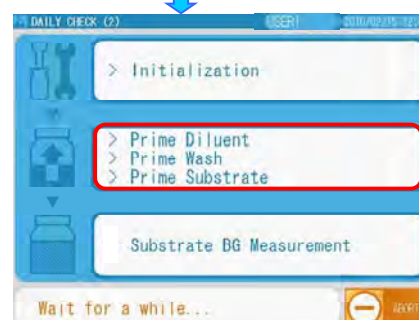


(5) After the preparations are complete, press the  OK button to begin Daily Check.

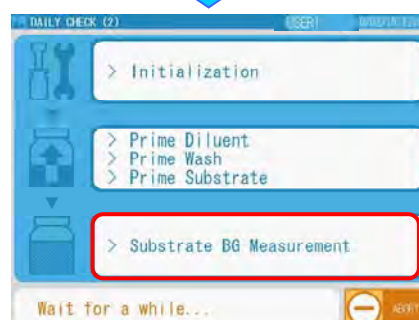
Checking each part of the instrument



Diluent, Wash and Substrate priming



Substrate background measurement



The daily check takes about 5 minutes.



If an error occurs during the Diluent, Washer or Substrate priming, check if the remaining volume of liquid in each tank and substrate bottle are sufficient, and also make sure that none of the tubes have been bent or twisted.

Section 6 Assay Preparations

- (6) When the Daily Check has been successfully completed, "Complete!" is displayed on the screen.



<1> SUBSTRATE REPLACEMENT

→ displays whether or not fluid replacement for the substrate tubing was sufficient.

When sufficient: **OK**

When insufficient: **NG**

(If "**NG**" is displayed, first confirm that the remaining volume of substrate is sufficient and conduct the Daily Check again.)

<2> 4MU BACKGROUND

→ measures and confirms the substrate fluorescent background intensity.

Less than 1500 nM: **OK**

1500 nM or more: **BH**

(In the case of "**BH**," replace the substrate with freshly prepared substrate and conduct the Daily Check again.)

<3> LAMP INTENSITY LEVEL

→ displays the detector's light source intensity.

0.5 or more: **OK**

Less than 0.5: **LL**

(If "**LL**" is displayed, please contact a Tosoh local representative)



- (7) Press the  button to print out measurement results for substrate background.

Printout example

```

SUBSTRATE BG MEASUREMENT  USER1  2010/02/26 08:36
                        SMP    REF
BACKGROUND :      157      177
SUBSTRATE  :     1047     16600
SUBSTRATE REPLACEMENT :      1.0      OK
4MU BACKGROUND :      252      OK
LAMP INTENSITY LEVEL :      0.8      OK
    
```

- (8) Press the  button to return to the HOME screen.

When an error occurs



<ERROR screen (example)>

If one of the daily check items deviates from its normal range, "Incomplete!" will appear on the DAILY CHECK screen. In this case, press the  button, and take the appropriate actions including checking the Diluent, Washer and Substrate. Return to the HOME screen, and carry out a daily check once again.



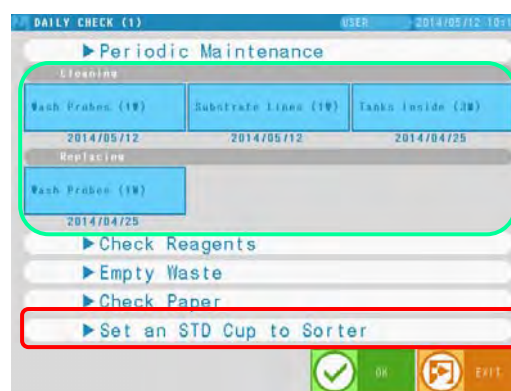
If an ERROR occurs during Substrate background measurement, check if 70% ethanol or 70% isopropyl alcohol was replaced with Substrate, and also check the remaining volume of Substrate.

6.5. Daily check (with a sorter)

- (1) Press the  button on the home screen.



- (2) The DAILY CHECK screen will be displayed. Check the four items (Cleaning: Wash probes, Substrate lines and Tanks inside; Replacing: Wash probes) shown in pale blue. After checking each item, press the corresponding button (item) on the screen. The time and date of the checking will be recorded.



Note

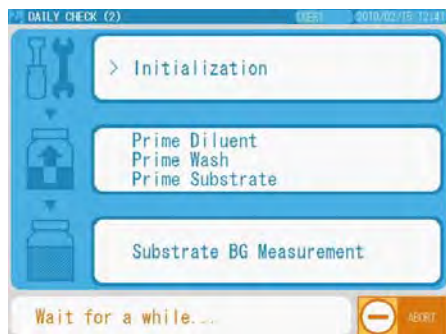
If a deadline for cleaning or replacement of those parts has already passed, the previous date of checking for that part blinks. If a date is blinking, make sure to carry out the corresponding check and then update the matching check date. Regarding cleaning and replacing methods, refer to “Section 11 Maintenance”.

- (3) Confirm that the remaining paper for recording is sufficient.
- (4) Open the cup drawer, and set a STD cup tray in order to carry out the instructions “Set an STD Cup to Sorter.”
- (5) Push back the cup drawer until it is completely set inside.



Section 6 Assay Preparations

- (6) After the preparations are complete, press the  button to begin Daily Check.



Checking for each part of the instrument

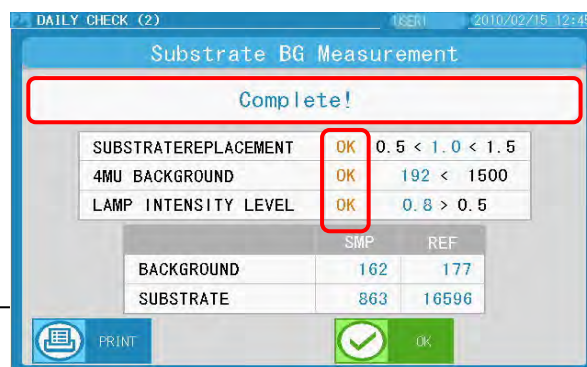
Diluent, Wash and Substrate priming

Substrate background measurement



If an error occurs during Diluent, Washer or Substrate priming, check if the remaining volumes of them in each tank as well as the substrate bottle are sufficient, and also make sure that none of the tubes has been bent or twisted.

- (7) When the Daily Check has been successfully completed, "Complete!" is displayed on the screen.



<1> SUBSTRATE REPLACEMENT

→displays whether or not fluid replacement for the substrate tubing was sufficient.

When sufficient: **OK**

When insufficient: **NG**

(If "NG" is displayed, first confirm that the remaining volume of substrate is sufficient and conduct the Daily Check again.)

<2> 4MU BACKGROUND

→measures and confirms the substrate fluorescent background intensity

Less than 1500 nM: **OK**

1500 nM or more: **BH**

(In the case of "BH," replace the substrate with freshly prepared substrate and conduct the Daily Check again.)

<3> LAMP INTENSITY LEVEL

→displays the detector's light source intensity.

0.5 or more: **OK**

Less than 0.5: **LL**

(If "LL" is displayed, please contact Tosoh local representatives.)

Section 6 Assay Preparations

- (8) Press the  **PRINT** button to print out measurement results for substrate background.

Print-out example

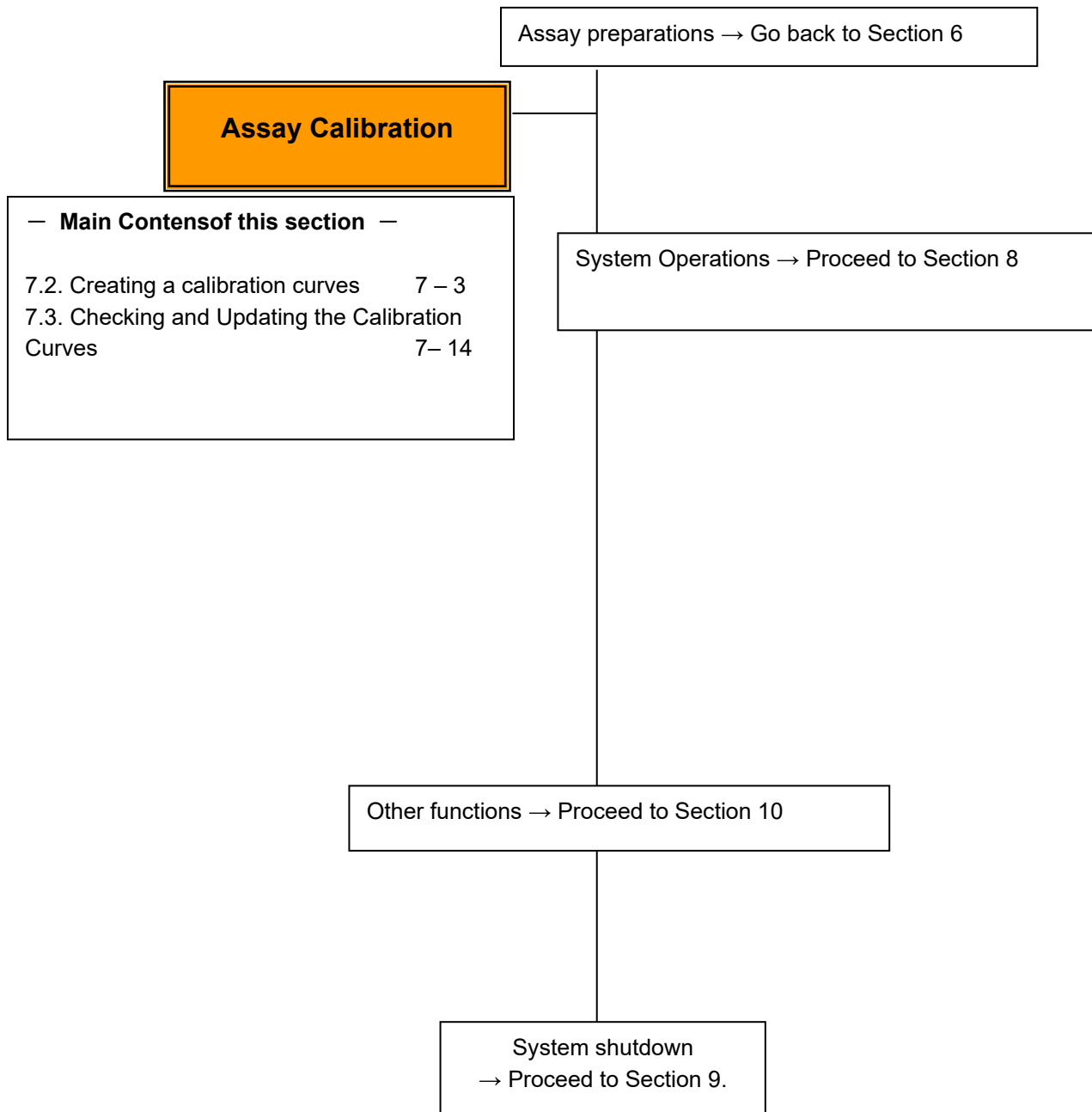
```
SUBSTRATE BG MEASUREMENT  USER1  2010/02/26 08:36
                        SMP  REF
BACKGROUND :      157      177
SUBSTRATE  :    1047  16800
SUBSTRATE REPLACEMENT :      1.0  OK
4MU BACKGROUND :      252  OK
LAMP INTENSITY LEVEL :      0.8  OK
```

- (9) Press the  **OK** button to return to the Home screen.

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook paper. There are no margins, text, or other markings on the page.

Section 7 Calibration

7.1. Introduction



Section 7 Calibration

The AIA-900 uses a calibration curve to convert output signals from the detector of the instrument to concentration values for the analyte. It is necessary to create calibration curves for the analytes, using the calibrators for each analyte.

It is necessary to create a new calibration curve when the period of validity of the current calibration curve has expired, or when the lot of the test cup has changed.

A calibration curve is either a 6-point type or a 2-point type. It is suggested to measure each level of the calibrators in triplicate (3 assays). In the case of a 6-point calibration curve, a total of 18 assays are performed.



In the case the validity period of a calibration curve has expired within 60 days AFTER EXPIRY

If the period of validity of a calibration curve has expired but it is still within 60 days after expiry, the letter "V" will be displayed on the CALIBRATION REVIEW (SELECTION) screen. In each assay result, a CV flag will be attached to a concentration value.

In the case the validity period of a calibration curve has expired for more than 60 days FROM EXPIRY

If the period of validity of a calibration curve has already expired for more than 60 days from expiry, "-" will be displayed on the CALIBRATION REVIEW (SELECTION) screen. An NC flag will be attached to each assay result, and a concentration value will not be output.

7.2. Creating calibration curves

7.2.1. Order the creation of a calibration curve

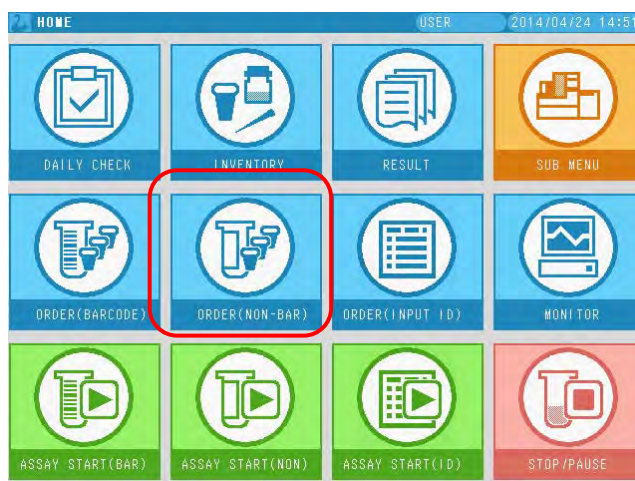
Generally, a calibration curve is created in non-barcode mode. The procedure is shown below. If you want to create in barcode mode, please contact a Tosoh local representative.

We recommend creating a calibration curve in non-barcode mode for the following reasons even if it can be done in barcode mode.

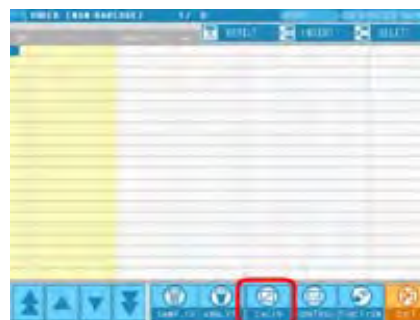
To create a calibration curve in barcode mode:

- The barcode sheet should be attached to the sample cup adapter for each calibrator.
- If an error occurred at scanning of the barcode for a calibrator, all the calibrators need to be measured again from the beginning.

(1) Press the  button on the HOME screen to open the ORDER (NON-BAR) screen.

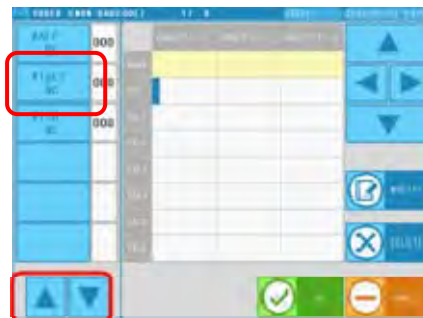


(2) Press the  button to display the screen for entering the analyte and lot number of the calibrators, and the assigned concentration value of each level of the calibrators (1) to (6).

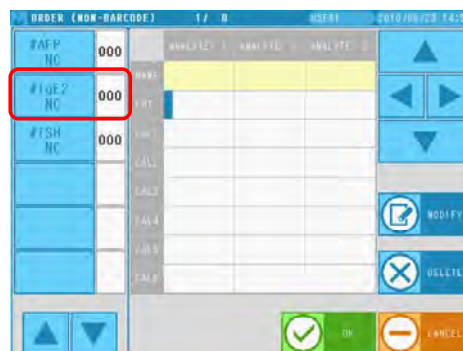


Section 7 Calibration

- (3) As an example, to register an order for calibration curve for #IgE2, press the  or  button to select "#IgE2".



The lot number to be displayed first is 000. Then it will be replaced with the lot number of the test cups read from their dot code when the calibrators are measured. When a sorter is used, it will be replaced with the lot number of the to be used test cups read from the barcode of the cup tray set in the sorter.



- (4) Enter the lot number and the concentration values printed on the vials of the calibrators or on the calibrator's barcode sheet (See below for an example). Confirm on the screen that the correct values were entered.



Note

Enter the lot number of the calibrator, a 3-digit number commencing from the 6th digit from the beginning of Calibrator lot.



<A Barcode Sheet of a calibrator>

Section 7 Calibration



Be sure to enter a concentration value for each level of calibrator in the calibration order, otherwise you will be unable to perform the calibration.

The initial value of concentration for each level displayed on the calibrator is zero.

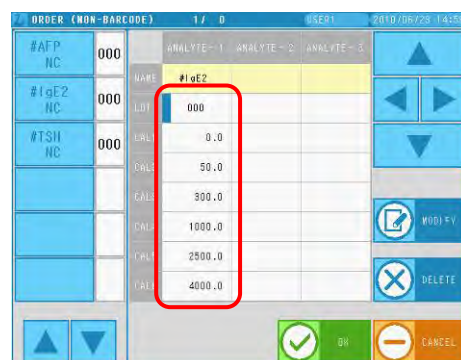
When creating an order for calibration, confirm that the values of CAL (1) - (6) (CAL (1) and (2) in the case of a 2-point calibration curve) are correctly entered.

If the concentration values are not in ascending order, you will be unable to finalise the order.

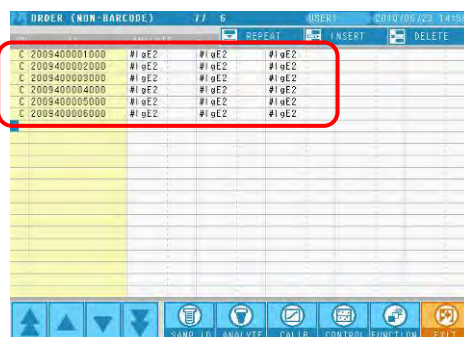
Note

If the entered calibrator lot number is the same as the one you entered at the latest calibration for the same analyte, not zero but the previously entered concentration values will be displayed as the initial values this time.

- (5) Press the  button. The calibration order for the analyte is created on the ORDER (NON-BARCODE) screen.



NAME	LOT	CAL
#1gE2	000	0.0
#1gE2	000	50.0
#1gE2	000	300.0
#1gE2	000	1000.0
#1gE2	000	2500.0
#1gE2	000	4000.0



C	LOT	NAME	CAL
C 2009400001000	#1gE2	#1gE2	
C 2009400002000	#1gE2	#1gE2	
C 2009400003000	#1gE2	#1gE2	
C 2009400004000	#1gE2	#1gE2	
C 2009400005000	#1gE2	#1gE2	
C 2009400006000	#1gE2	#1gE2	

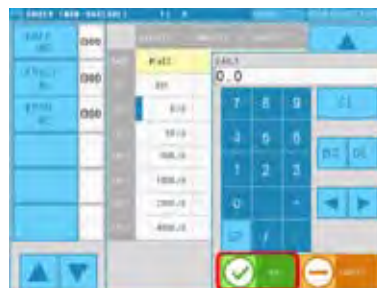
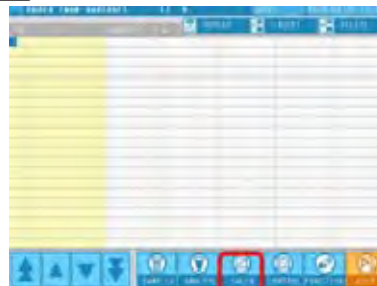
Note

You can enter a lot number and a concentration value of a calibrator by scanning barcodes on a barcode sheet (see previous page) of a calibrator with the Handheld barcode reader (optional equipment). If you would like more information, please contact a Tosoh local representative.

Section 7 Calibration

Procedure for changing the lot number and the concentration

- (1) Press the  button to open the ORDER (NON-BARCODE) screen.
- (2) Press the  button to display the screen for selecting the analyte and entering the lot number and concentration.
- (3) Using  , turn a page to find the analyte in question, and press the analyte button.
- (4) A numeric keypad screen will appear, so press the  button to erase the lot number, and enter the new lot number printed on the calibrator barcode sheet.



Note

You can enter a lot number by using a handheld barcode reader to scan the barcode label on the calibrator barcode sheet.

- (5) Press the  button to complete the procedure to change the lot number.

Section 7 Calibration

- (6) The cursor will automatically move to CAL1, and a numeric keypad screen for entering the concentration value will appear. Press the **CL** button to erase the concentration value displayed, and enter the new concentration value for CAL (1) printed on the calibrator barcode sheet.
- (7) Press the **OK** button to complete the procedure for changing the concentration value for CAL (1).

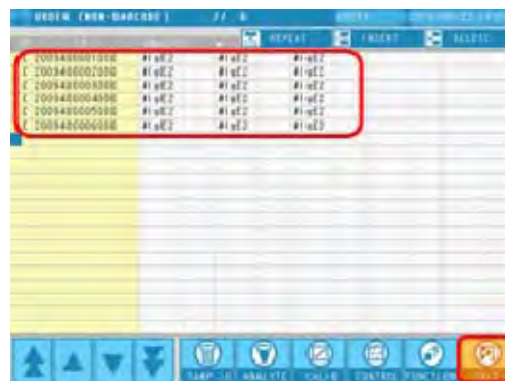


Note

You can also set a concentration value by using a handheld barcode reader to scan the value on the concentration label attached to the calibration barcode sheet.

- (8) In the case of a 6-point calibration curve, enter concentration values from CAL (2) to (6) in an identical manner using the same procedure. In the case of a 2-point calibration curve, enter CAL (2) and proceed to step 9).
- (9) Upon completion of registration of concentration values for a 6-point or 2-point calibration curves, press the **OK** button.

- (10) The screen will return to the ORDER (NON-BARDOCE) screen.
- (11) The order for calibration for the analyte is created on the ORDER (NON-BARCODE) screen.



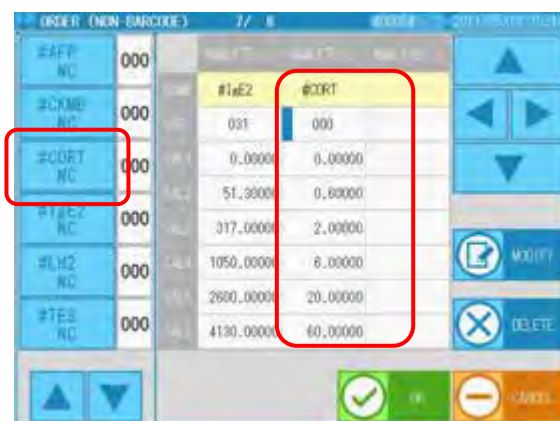
- (12) Press the **EXIT** button.
- (13) The screen will return to the HOME screen.

Section 7 Calibration

7.2.2. Creating orders for multiple calibration curves

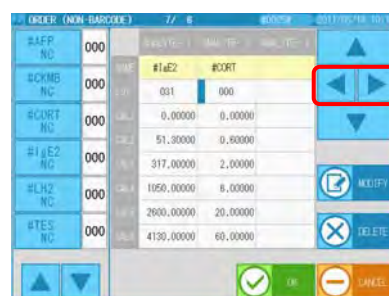
You can simultaneously prepare orders for calibration curves for up to 6 analytes on the AIA-900.

After creating the order for the first analyte, select the next one.

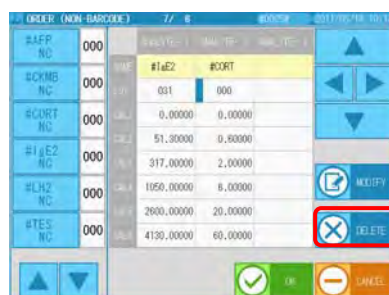


Erasing 1 analyte after creating multiple orders for calibration

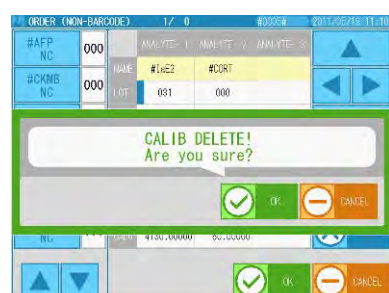
- (1) Using the  button, move the cursor to the analyte to be erased.



- (2) Press the  button.



- (3) Press the  button in the confirmation dialog box to delete the order.



Section 7 Calibration

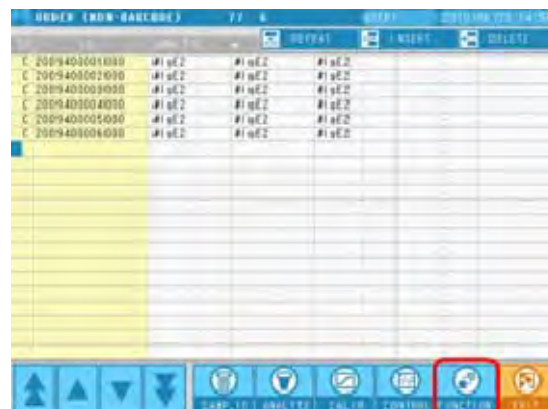
7.2.3. Checking the order for calibration curve (Printing the WORK LIST)

You can print the created order for calibration as a WORK LIST.

- (1) After creating the calibration order, press the



button on the ORDER (NON-BARCODE) screen.



- (2) Select the **WORK LIST** button.

- (3) Press the **OK** button.



- (4) The printed WORK LIST indicates the necessary number of test cups for the assay and the required quantity of samples. The required quantity of samples includes the dead volume (100 µL) for the sample cups.

Q1-Q1	C	2009403101049	130
		#IgE2, #IgE2, #IgE2	
Q1-Q5	C	2009403102049	130
		#IgE2, #IgE2, #IgE2	
Q1-Q9	C	2009403103049	130
		#IgE2, #IgE2, #IgE2	
Q2-Q3	C	2009403104049	130
		#IgE2, #IgE2, #IgE2	
Q2-Q7	C	2009403105049	130
		#IgE2, #IgE2, #IgE2	
Q3-Q1	C	2009403106049	130
		#IgE2, #IgE2, #IgE2	
Q3-Q10		(END MARKER)	

7.2.4. Preparing calibrators and test cups

- (1) Prepare the calibrators and the test cups for the analyte.
- (2) Set the sample cups on the sample rack according to the WORK LIST, and arrange the test cups using the cup holder without leaving any gaps between them. When using a sorter, arrange the sample cups on the sample rack without leaving any gaps between them, and set the test cups in the sorter.
- (3) Set the sample rack in the loader.

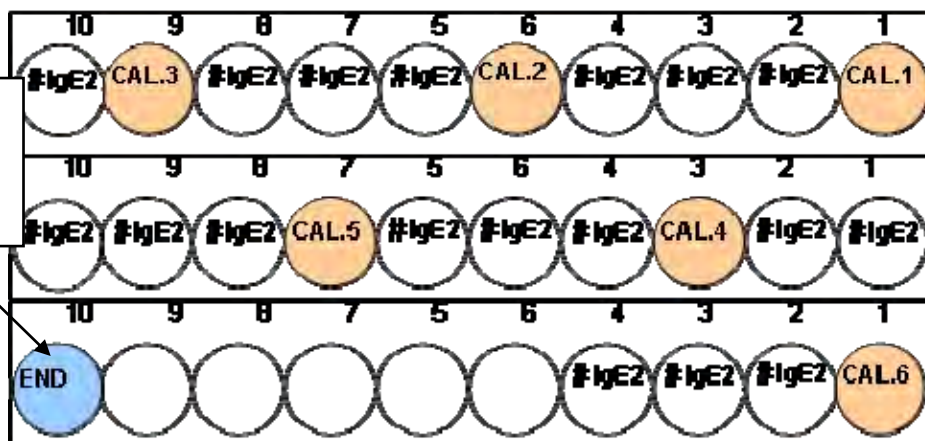
Example: When creating a calibration curve for #IgE2, set the calibrators and the test cups as shown below.

When not using a sorter

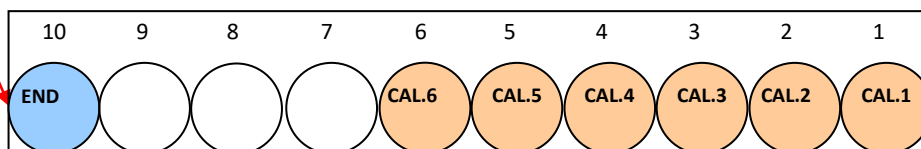
Test cup: #IgE2

Calibrator

Set the endmarker or set an empty rack.



When using a sorter



When using a sorter, set the test cups in the sorter. In the case of a 6-point calibration curve, 18 test cups will be used. Confirm that a sufficient number of test cups have been set.

Section 7 Calibration

7.2.5. Measuring calibrators

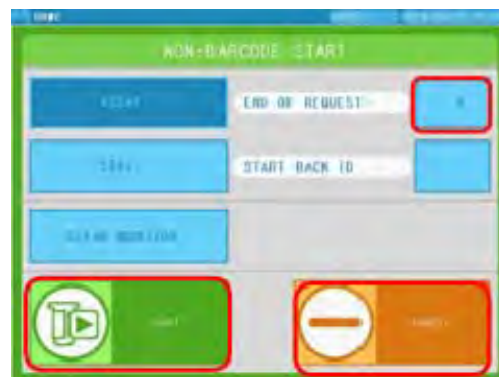
If the quantity of reagents becomes insufficient during calibration, assays for the calibration should be carried out once again from the beginning. Before starting the calibration, be sure to confirm that the quantities of the Diluent, the Washer and the Substrate are sufficient.

- (1) Press the  button on the HOME screen.



When performing a non-barcode assay, do not change the number shown at “END OF REQUEST”. If it is changed, a calibration curve may not be created.

- (2) Press the  button to start the assays. The screen will return to the HOME screen.



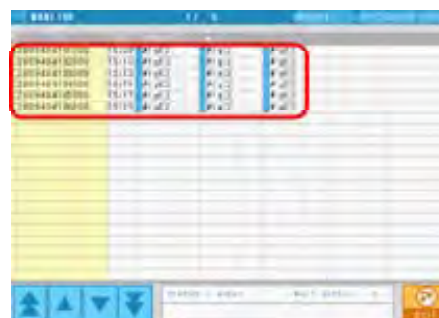
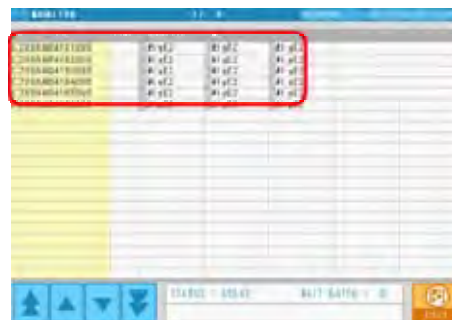
- (3) Press the  button.
- You can check the progress of assays on the monitor screen. The colour of the ☐ mark shows the status of assay. (The status of assay will also be displayed at the bottom of the screen as well.)



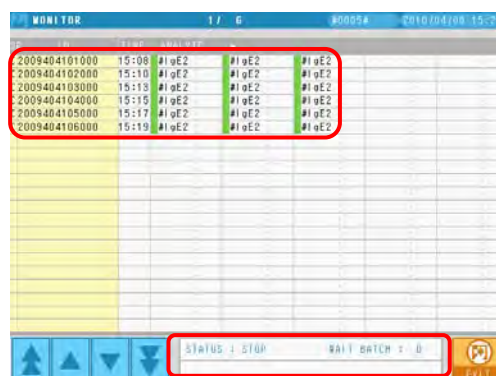
Section 7 Calibration

[Screen display during a calibration operation:

- Gray: Not yet sampled
- Blue: Sampling completed
- Green: Assay completed



- (4) Upon completion of the assays, the colours of all of the ☐ marks on the monitor screen change to green. Also, the message at the bottom of the screen changes to "stop".



7.3. Checking and Updating Calibration Curves

After about 18 minutes from the start of the assay, the initial assay results will be reported. Subsequently, the assay results for the rest of the assays will be reported every 40 seconds. The calibration curve at the completion of the assays is in a “PENDING” status, so a finalisation operation must be carried out to make the calibration curve valid.

7.3.1. Checking the calibration curve

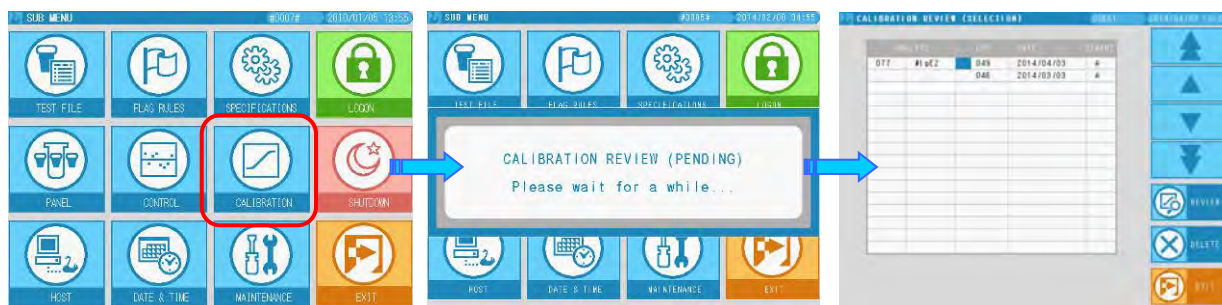
- (1) Press the  button on the HOME screen to open the SUB MENU screen.



- (2) Press the  button to display the CALIBRATION REVIEW (PENDING) screen.



Note When there is no PENDING data, CALIBRATION REVIEW (SELECTION) screen will appear to display finalised data as the following figures indicate



Section 7 Calibration

Analyte, Lot Number

Column for "Data non-use" flag

Column for error flag

When another calibration curve is created with a different lot number of test cups, the lot number is displayed.

To select whether or not to use data

To calculate the calibration curve and display the graph

To remove all the calibration curve data

To go to the next screen for another calibration data before finalisation

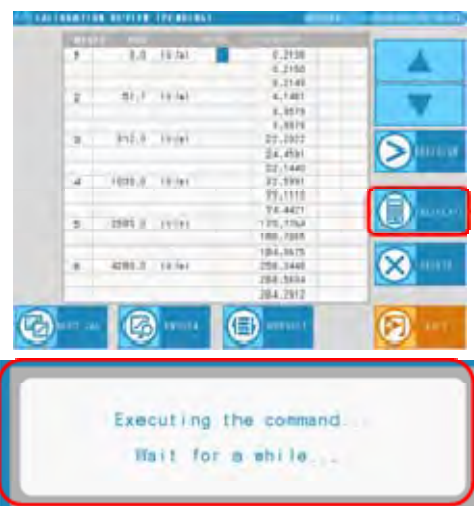
To browse a list of already saved calibration curves

To switch the list of data points in ascending order to/from that in descending order

#	ANALYTE	LOT NO.	CONC.	RESP.	DATA NON-USE	ERROR FLAG
1	0.0	10/m	0.2138	0.2150		
2	51.7	10/m	0.2149	4.1461		
3	312.0	10/m	3.9579	3.9979		
4	1030.0	10/m	22.2022	24.4591		
5	2580.0	10/m	22.1440	72.5991		
6	4200.0	10/m	75.1110	74.4421		

(3) After confirming the data, press the button in order to create a calibration curve.

(4) The message "Executing the command...Wait for a while" is displayed, and then the calibration curve graph screen appears. Check the displayed calibration curve.



Note

If there is an abnormal data point that you may wish to exclude from the calibration curve data, return to CALIBRATION REVIEW (PENDING) screen and make the data invalid by pressing the "DECISION" key. The data flagged by ">" will not be used for calculation of the calibration curve.



Note that after you press the button to finalise the calibration curve, you will be unable to change or re-calculate the calibration data.

Section 7 Calibration

The horizontal axis of the graph indicates the concentration, and the vertical axis indicates the rate values.



To return to the CALIBRATION REVIEW (SELECTION/ PENDING) screen.

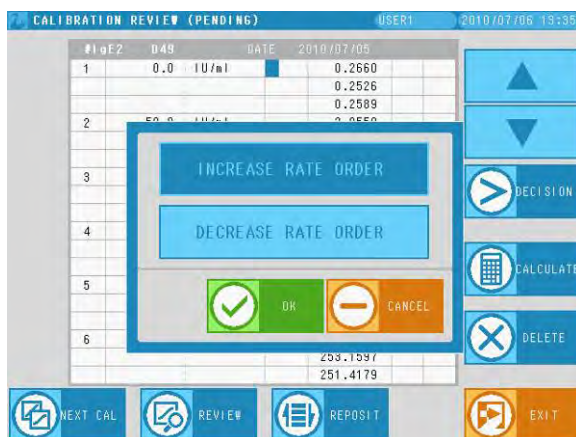
To print the displayed calibration curve.

Calibration check
(See Section 7.3.3)

To finalise the calibration curve.

Note

If you have performed assays for the calibrators in the wrong order, you can switch the data from ascending order to descending order and vice versa by pressing the [REPOSIT] (reposition) button. A calibration curve can be created based on the switched data.



7.3.2. Finalising and printing the calibration curve

After checking that the calibration curve is acceptable, carry out the finalization operation in order to make the calibration curve valid.



Note that you will be unable to change or recalculate the calibration data points after you have finalized the calibration curve.

Note

- You can finalize 2 calibration curves for different lots of cups per analyte.
- You cannot finalize 2 calibration curves for the same lot of cups simultaneously, but you can overwrite the old calibration curve with the new.



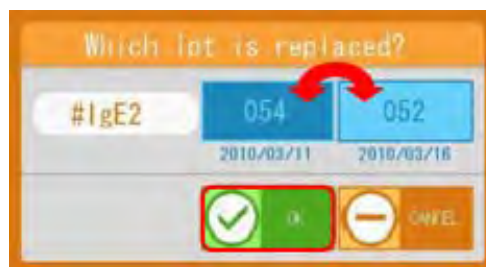
(1) Press the  button.



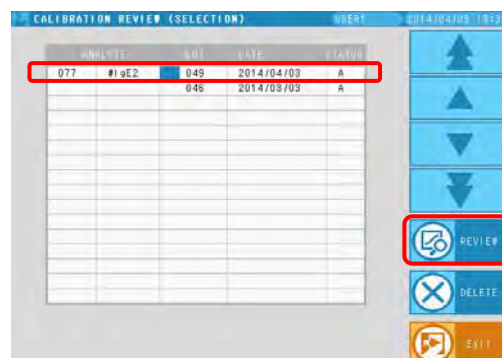
(2) The message “Executing the command... Wait for a while...” is displayed, and then the calibration curve is finalized and the screen returns to CALIBRATION REVIEW (PENDING) screen.

If there is a calibration curve for the same lot of calibrators that has already been finalized, a warning message of “Calibration of same lot existed! Overwrite?” will appear.

Also, if calibration curves for two lots of calibrators have already been finalized, a warning message of “Which lot is replaced?” will appear. Then select the lot to be replaced.

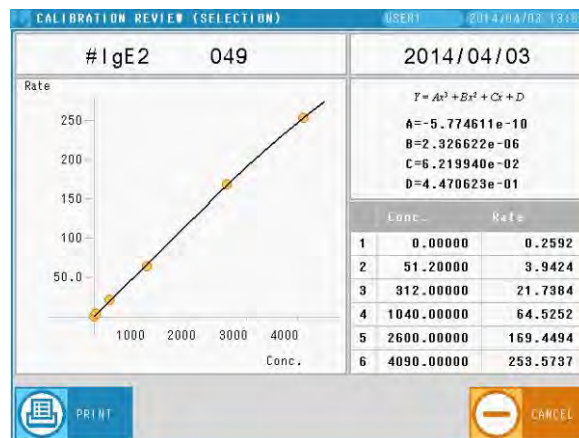


(3) To print the finalized calibration curve, select the finalized calibration curve from the CALIBRATION REVIEW (SELECTION) screen, then press the  button to display the graph.



Section 7 Calibration

- (4) Press the  button to print the finalized calibration curve.



Calculation formula

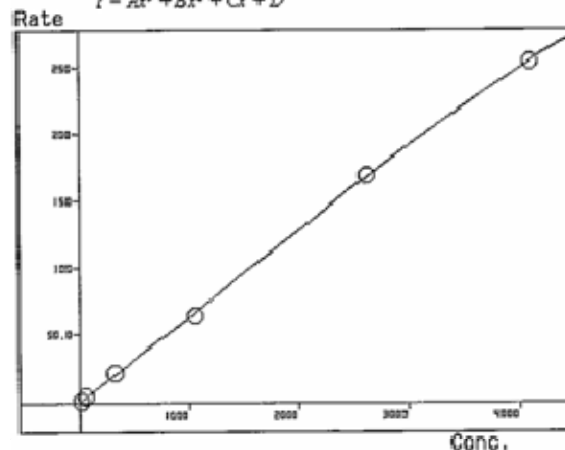
Calibration curve

Concentrations

Rate values

Coefficients of the calculation formula

* CALIBRATION REPORT * USER1 2010/02/25 12:42
 CAL. DATE:2010/01/19 STATUS :ACCEPTED
 ANALYTE :#IgE2 LOT :049
 $Y = Ax^3 + Bx^2 + Cx + D$



CONC1=0.00000
 CONC2=51.20000
 CONC3=312.00000
 CONC4=1040.00000
 CONC5=2600.00000
 CONC6=4090.00000
 RATE1=0.25920
 RATE2=3.94236
 RATE3=21.73838
 RATE4=64.52522
 RATE5=169.44943
 RATE6=253.57370
 A=-5.774758e-10
 B=2.326710e-06
 C=6.219927e-02
 D=4.470524e-01

7.3.3. Calibration check

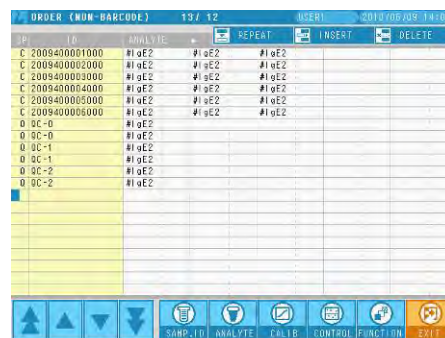
Calibration Check is a function for checking the calibration curve in pending by converting measured values for control materials to concentrations with the calibration curve. The controls to be used for Calibration Check should be assayed with test cups with the same lot number as used for the calibration curve in pending.

Calibration Check can be done for up to 6 levels of controls for each calibration curve in pending.

The Controls to be used for Calibration Check need to be assayed immediately after assays for calibrators (if calibrations are performed for multiple analytes in a single operation, assays for controls must be carried out after that group of assays). Calibration Check does not function if a patient sample assay is performed between the calibrator and control assays.

Perform the operation according to the following procedure.

- (1) Set controls in a sample rack. Assay the controls after the calibration curve has been established. When using a sorter, there is no need to set test cups in sample racks. Regarding the creation of an assay order for controls, refer to **"Section 8 System Operations."**

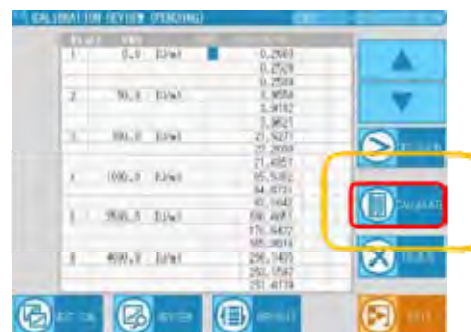


SP	ID	ANALYTE	REPEAT	INSERT	DELETE
C	2009400001000	#1gE2	#1gE2	#1gE2	
C	2009400002000	#1gE2	#1gE2	#1gE2	
C	2009400003000	#1gE2	#1gE2	#1gE2	
C	2009400004000	#1gE2	#1gE2	#1gE2	
C	2009400005000	#1gE2	#1gE2	#1gE2	
C	2009400006000	#1gE2	#1gE2	#1gE2	
Q	QC-0	#1gE2			
Q	QC-1	#1gE2			
Q	QC-2	#1gE2			
Q	QC-2	#1gE2			



When using a sorter, set only test cup trays of the lot with which the calibration is done in the sorter. Otherwise, the Calibration Check may be carried out with the test cup of the unexpected lot.

- (2) Upon completion of all assays for controls, CALIBRATION REVIEW (PENDING) screen will appear.



Point	Conc	Resp	Calculated
1	0.0	0.000	0.000
2	50.0	0.000	0.000
3	100.0	0.000	0.000
4	150.0	0.000	0.000
5	200.0	0.000	0.000
6	250.0	0.000	0.000
7	300.0	0.000	0.000
8	350.0	0.000	0.000
9	400.0	0.000	0.000
10	450.0	0.000	0.000

Section 7 Calibration

- (3) Select the target calibration curve data then press the



button.



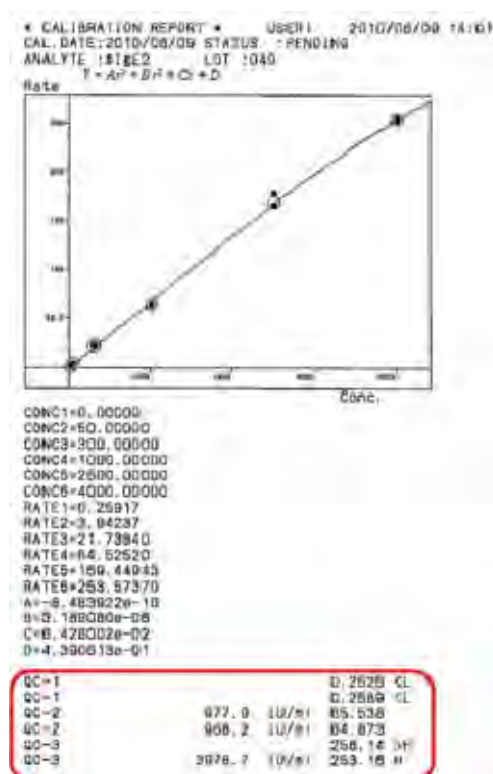
- (4) Press the  button on the displayed calibration curve graph screen to display the concentration values for the controls converted with the calibration curve in pending on the screen.

- (5) After confirmation, press the  button to close the Calibration Check screen.

- (6) While the calibration curve graph screen is

being displayed, press the  button to print the calibration curve graph and also the results of Calibration Check.

Unless the  button is pressed, the results of the Calibration Check will not be printed.



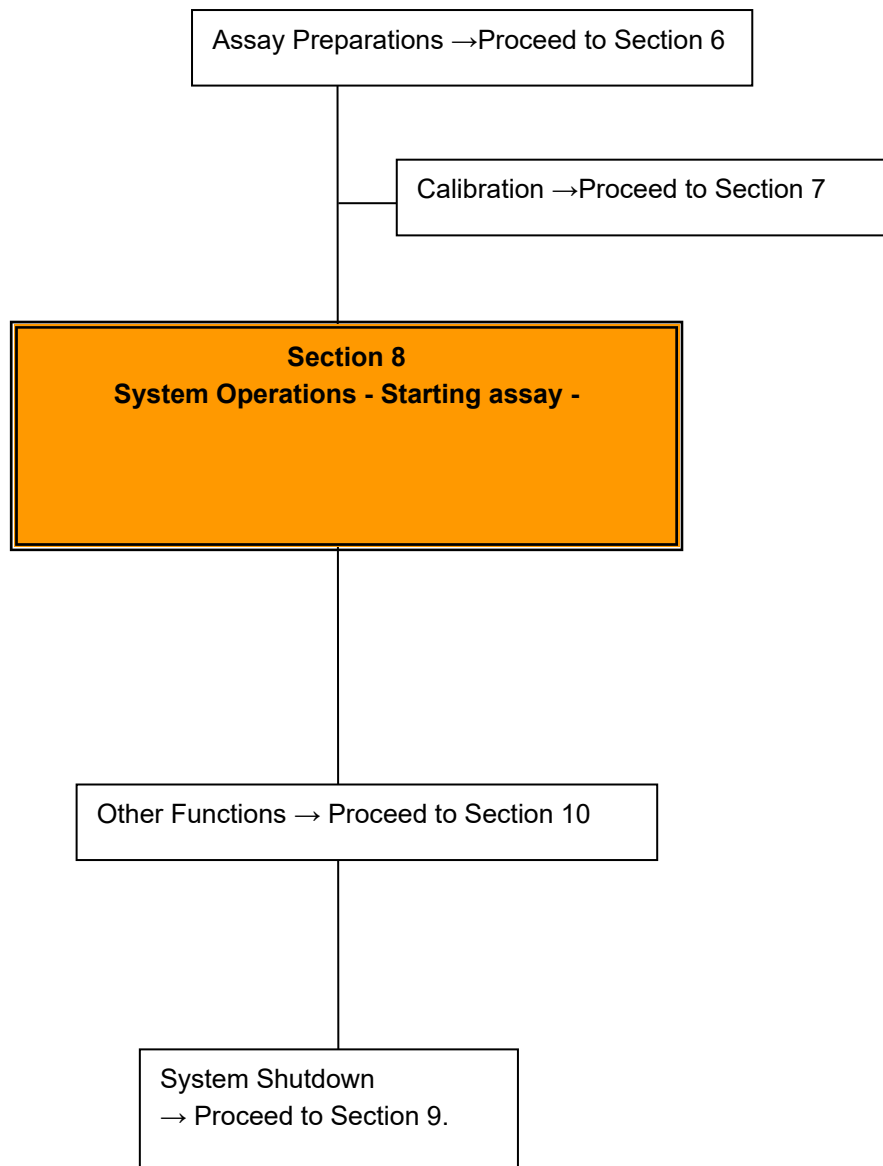
You cannot add the data obtained by using the Calibration Check function to the report of the finalized calibration curve.

If you wish to check the concentration values for the controls obtained in Calibration Check by using the finalized calibration curve, re-calculate the assay results for controls in Assay Result screen (See “8.6 Assay Result”).

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Section 8 System Operations

8.0. Introduction



8.1. Assay Methods and Assay Modes

Three assay methods (BARCODE, NON-BAR and INPUT ID) are available with AIA-900.

Also, 4 modes are available to determine how to create orders (depending on the order is created or not). They are AUTO mode, ORDER mode, INPUT ID mode and HOST QUERY mode, and are called "assay modes" collectively.



Determine your assay method and assay mode from the 8 combinations shown in the table.



The controls cannot either be assayed in [1], [3] or [5] assay modes.
The calibrators cannot either be assayed in [1], [3], [5] or [6] assay modes.

	Barcode Assay		Non-barcode Assay		INPUT ID Assay
Without a sorter	Without Order (AUTO Mode) [1]	With Order (ORDER Mode) [2]	Without Order (AUTO Mode) [3]	With Order (ORDER Mode) [4]	With Order (INPUT ID Mode) [5]
With a sorter	Without Order (HOST QUERY Mode) [6]	With Order (ORDER Mode) [7]	X		X
				With Order (ORDER Mode) [8]	

The above 8 combinations of the assay method and assay mode, with/without a sorter, [1] - [8], will be described in detail below.



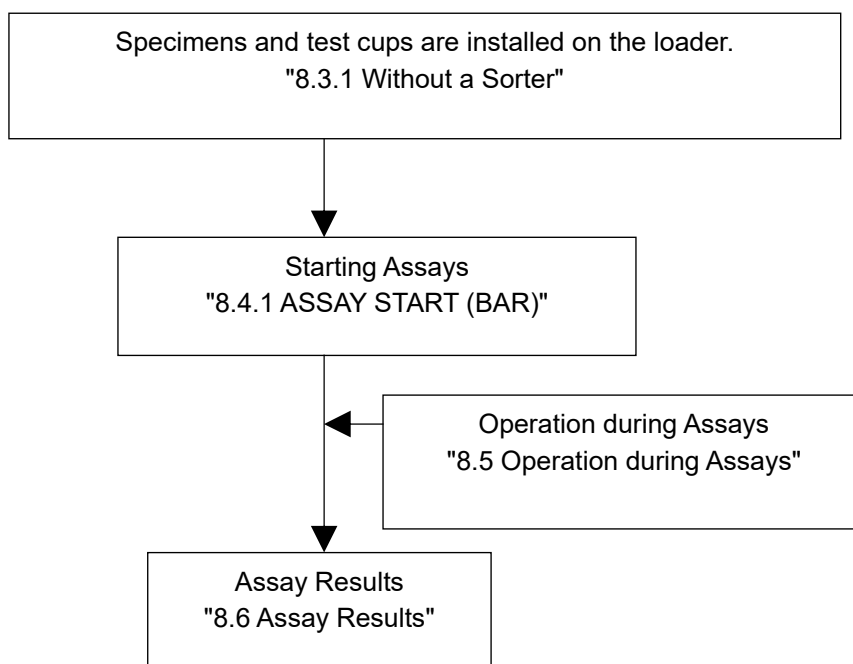
We recommend creating a calibration curve in non-barcode assay for the following reasons even if it can be done in barcode assay.

To create a calibration curve in the barcode assay:

- The barcode sheet should be attached to the sample cup adapter for each calibrator.
- If an error occurred at scanning of the barcode for a calibrator, all the calibrators need to be measured again from the beginning.

(See "7.2.1 Order for the creation of a calibration curve.")

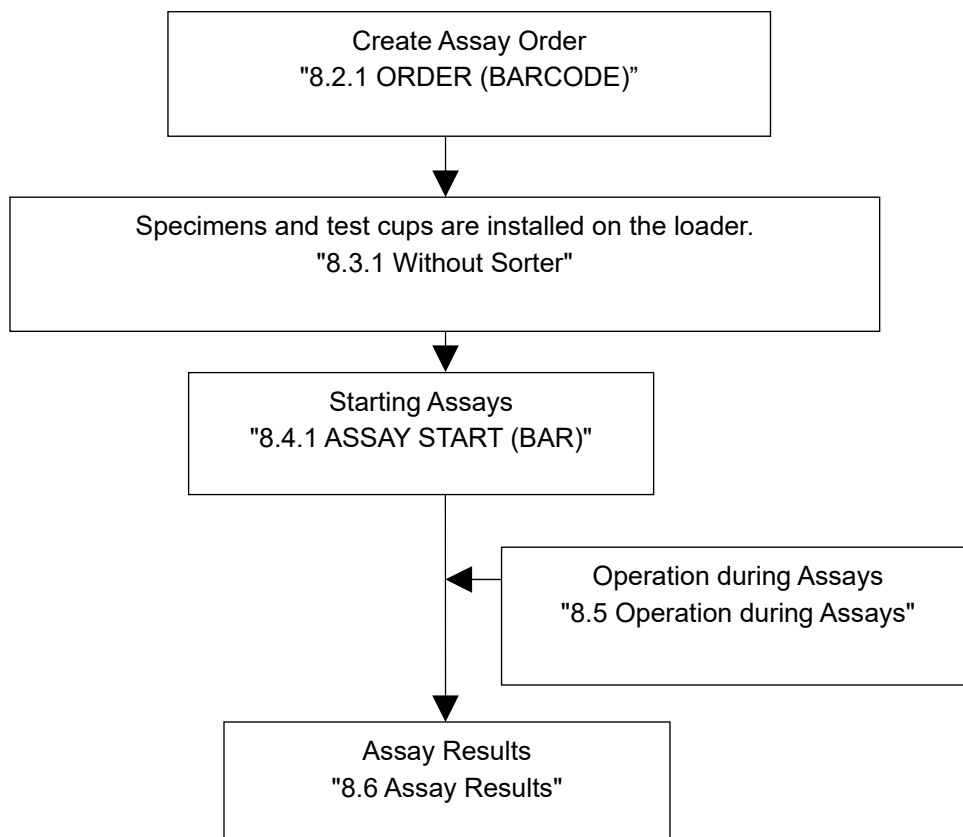
[1] AUTO Mode (Barcode Assay)



Use the AUTO Mode (Barcode Assay) when performing assays with specimens and test cups on the loader. Since the specimen types and the analytes of the test cups are automatically recognized before assays, order creation is not required. See sheet [2] for more info.

- Attach a barcode on a specimen. Specimens without a barcode cannot be assayed.
- Either Controls or Calibrators cannot be assayed.
- This AUTO Mode (Barcode Assay) is not available when a sorter is used.

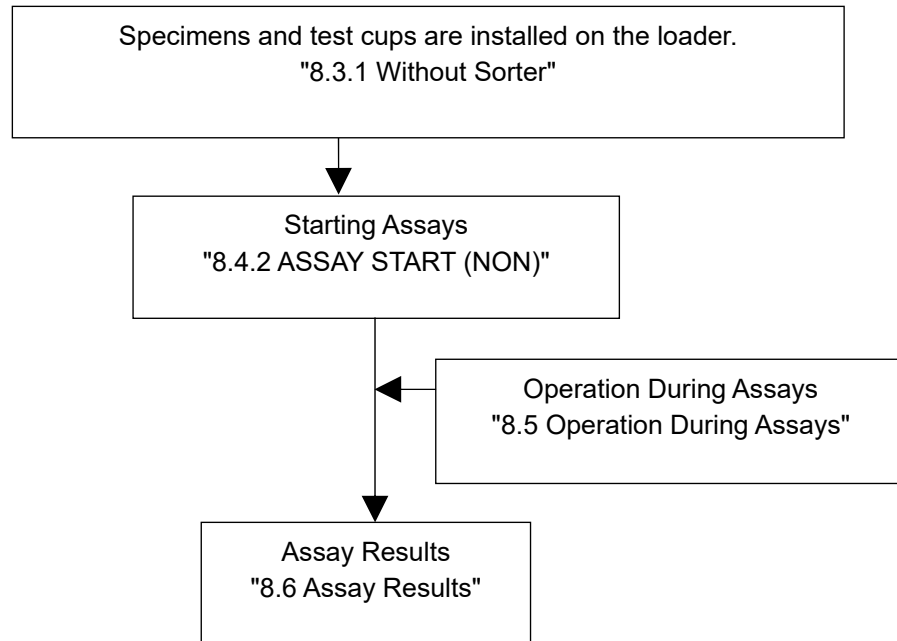
[2] ORDER Mode (Barcode Assay, Without a Sorter)



Use ORDER Mode (Barcode Assay, Without a Sorter) when performing assays with specimens and test cups set on the loader by following the order which was created on the Order screen.

- Attach a barcode on a specimen. A specimen without a barcode cannot be assayed.
- When the specimen ID read from the barcode on a specimen is present in the assay order, it is further checked to ensure that the test cups are set in accordance with the order or not. If some of them are not matched, the assays not matched will be skipped.
- If the specimen ID read from the barcode on a specimen is not present in the assay order, the specimen will be assayed by the [1] AUTO Mode above (See P8-3).

[3] AUTO Mode (Non-barcode Assay)



Use the AUTO Mode (Non-barcode Assay) when performing assays with specimens and test cups set on the loader. Since the specimen types and the analytes of the test cups are automatically recognized for assays, an order creation is not required.

A specimen without a barcode can be assayed. The AIA-900 provides the specimen ID to the specimen automatically following the rules below.

Specimen ID Provided Automatically: Pddhmm-AABB-CCC

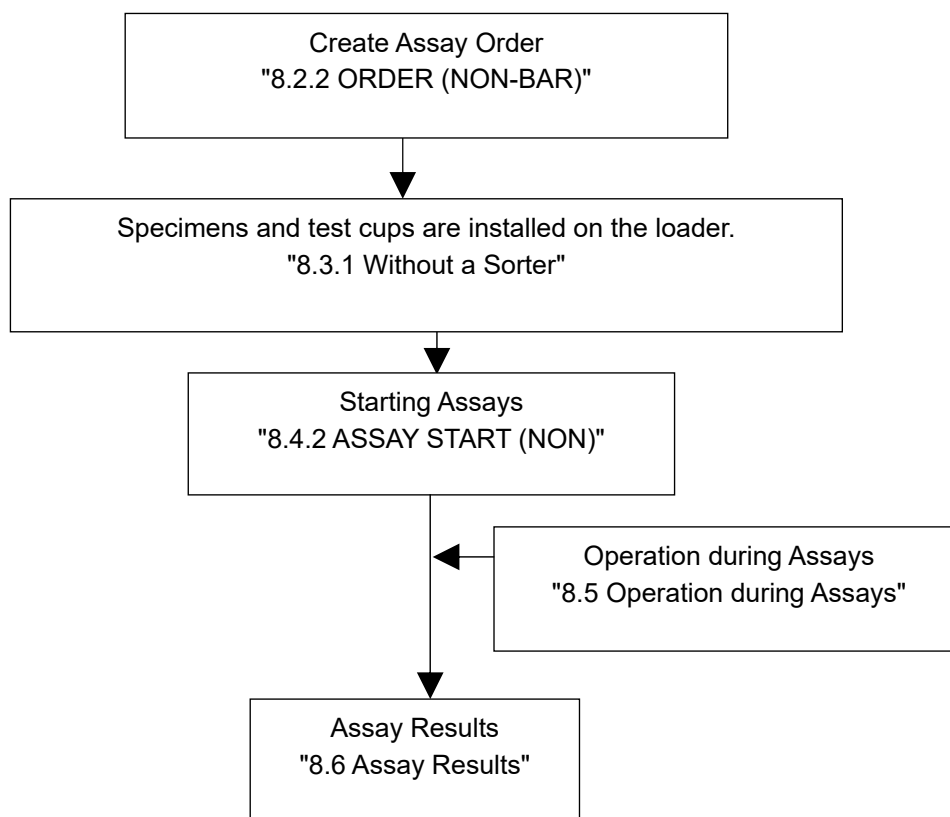
dd: Day, hh: Hour, mm: Minute

AA: Rack Number, BB: Rack Position Number

CCC: Serial Number

- Either Controls or Calibrators cannot be assayed.
- This AUTO Mode (Non-barcode Assay) is not available when a sorter is used.

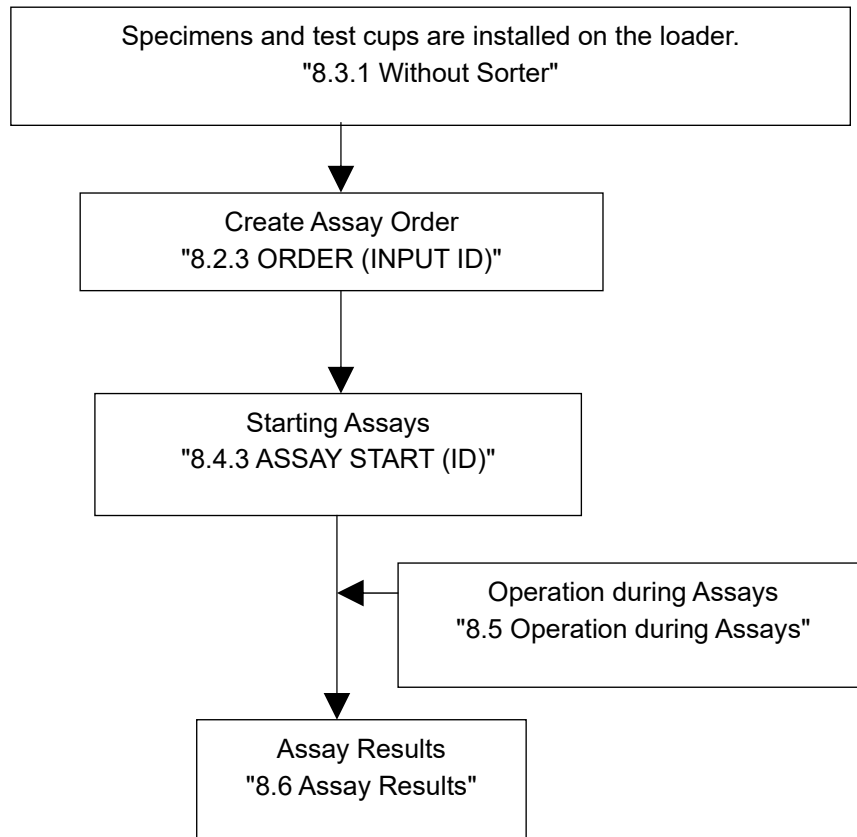
[4] ORDER Mode (Non-barcode Assay, Without a Sorter)



Use ORDER Mode (Non-barcode Assay, Without a Sorter) when performing assays with specimens and test cups set on the loader by following the order which was created on the Order screen. The specimen IDs should be entered when the order is created.

- The specimens and test cups should be set in sample racks without having any empty positions.
- Check whether the specimens and test cups are set in accordance with the order or not. If some of them are not, the assays for such specimens or analytes will be skipped.

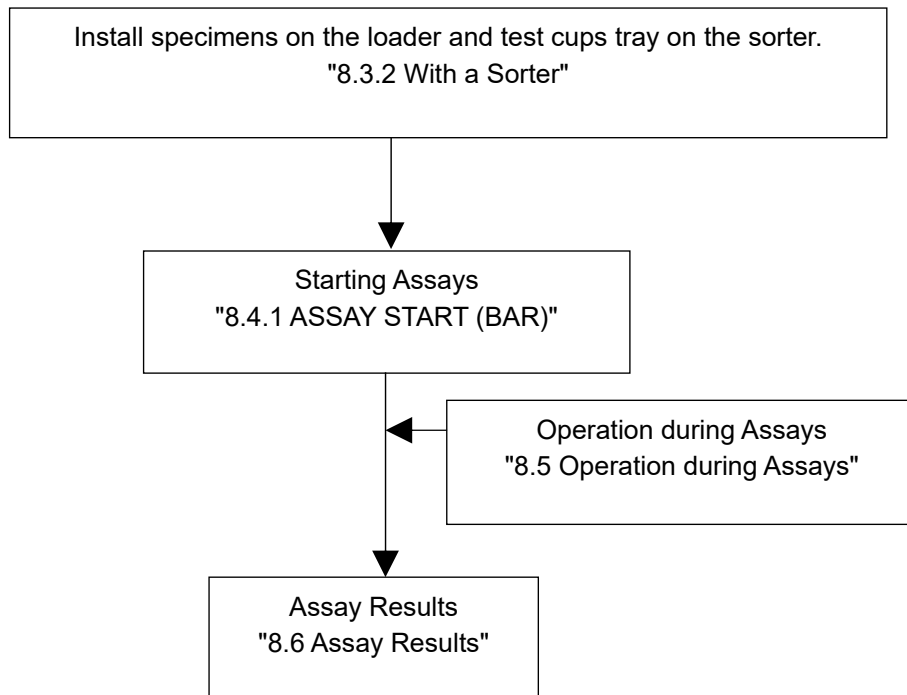
[5] INPUT ID Mode



Use INPUT ID Mode when performing assays by using specimen IDs. After setting specimens and test cups on the loader, create an assay order only for the specimen IDs and the set positions for the specific specimens, and then assay them.

- This INPUT ID Mode is not available when a sorter is used.
- Controls and calibrators cannot be assayed.
- If the set position of the specimen is not the same as that mentioned in the assay order, the assay of the specimen will be skipped.

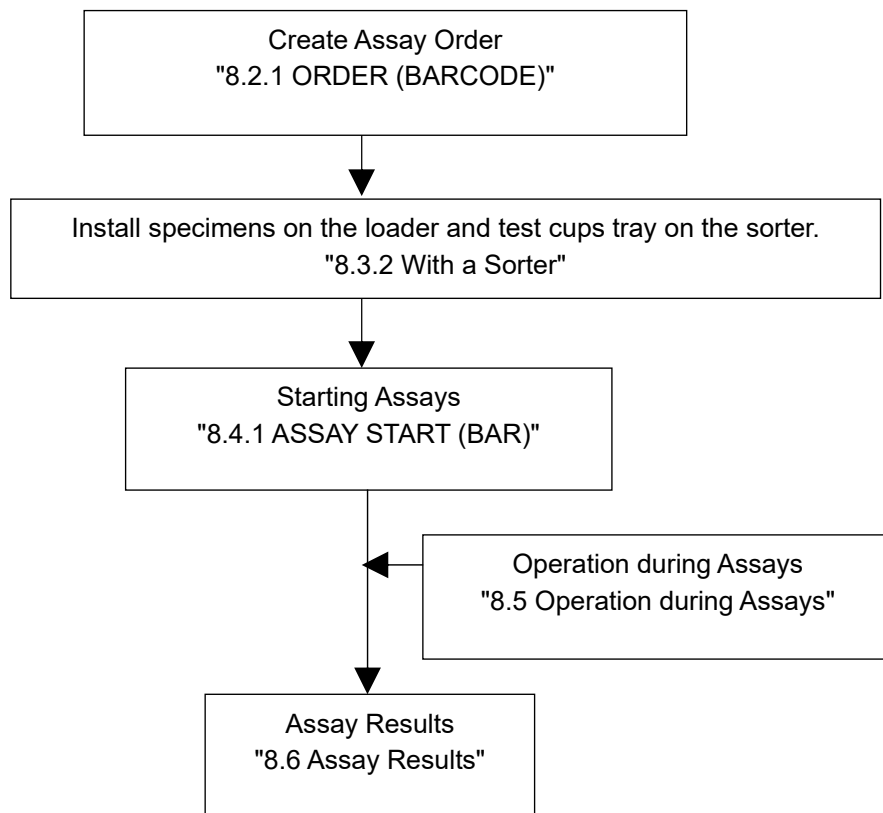
[6] HOST QUERY Mode



Use HOST QUERY Mode when performing assays by querying the host computer for the barcodes read from the specimens.

- HOST QUERY Mode is only available when a sorter is connected.
- Assays of calibrators are not available.
- When an assay order is set on the AIA-900, query to the host computer will not be performed because the AIA-900 will perform assays preferentially with the assay order.
- QUERY setup is required before the HOST QUERY Mode is used. Please refer to "Section 10.13 HOST".

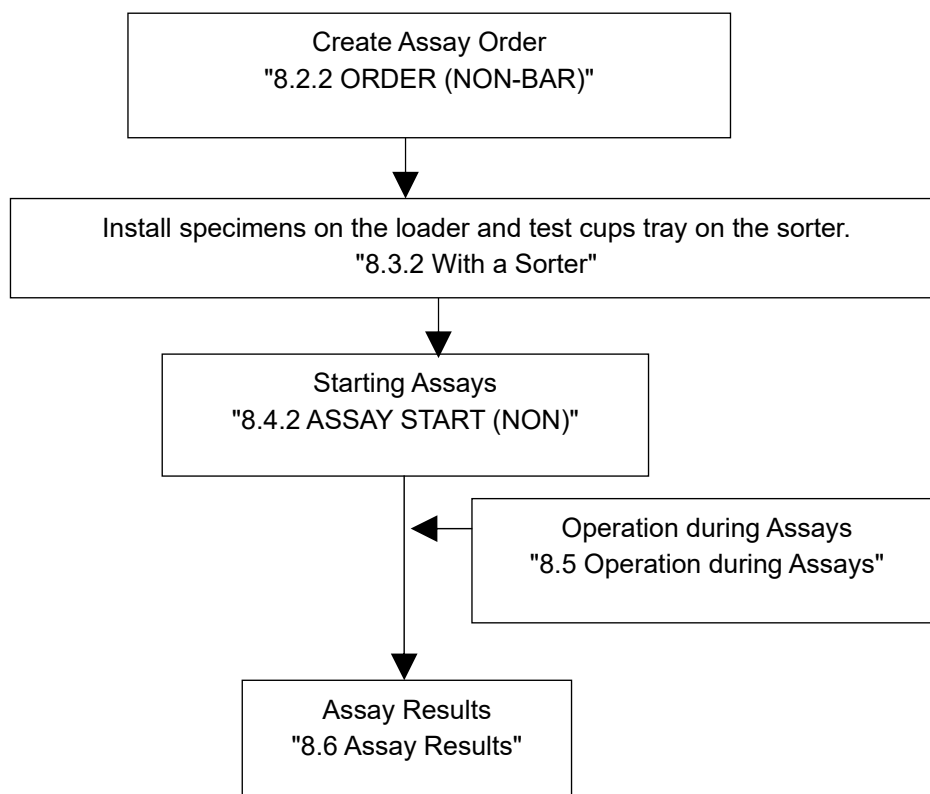
[7] ORDER Mode (Barcode Assay, With a Sorter)



This ORDER Mode is used when performing assays in accordance with the created assay order on the Order screen with specimens on which barcodes are attached and which are set in the loader.

- Attach a barcode on a specimen. A specimen without a barcode cannot be assayed.
- This ORDER Mode is only available when a sorter is connected.
- If the specimen ID read from the barcode on a specimen is not present in the assay order, the assay for the specimen will be skipped.

[8] ORDER Mode (Non-barcode Assay, With a Sorter)



This ORDER Mode is used when performing assays in accordance with the created assay order on the Order screen with the specimens without a barcode which are set on the loader. Specimen IDs should be entered when the assay order is created.

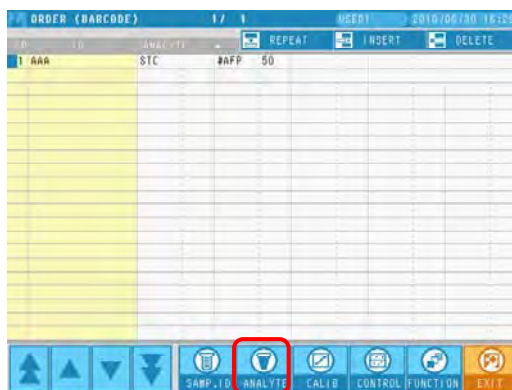
- This ORDER Mode is only available when a sorter is connected.
- Since the system has no function to check the matching between the set specimens and those in the assay order, make sure that the specimens are set properly on sample racks in accordance with the work list.

8.2. Creation of Assay Order

Specimen types available in AIA-900 are as follows:

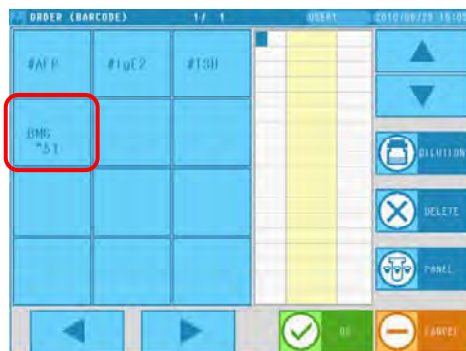
- SP.1: Specimen Type 1 (Example: Serum)
- SP.2: Specimen Type 2 (Example: Urine)
- QC: Control

The dilution ratio to be applied for a specimen is set in the TEST FILE per analyte according to the specimen type (SP.1, SP.2). For example, in case of $\beta 2$ - microglobulin (BMG), SP.1(serum) is diluted 51-fold while SP.2(urine) is diluted 5-fold.



The following screens for selecting analytes are displayed by pressing  button.

Choose SP.1 on the Order screen



Choose SP.2 on the Order screen



Note

The dilution ratios for specimens, controls and calibrators are set respectively in the TEST FILE. In the case the dilution ratio is provided from the host computer, the provided dilution ratio is used for the assay.

Section 8 System Operations

In ORDER Mode, the dilution ratio is specified when creating the assay order, while in AUTO Mode, the dilution ratio is decided by the type of the specimen container. You can choose the combinations of dilution ratios in AUTO mode from following 4 modes.

Mode 1	When a sample cup is used, the dilution ratio of SP.1 is applied. When a primary tube is used, the dilution ratio of SP.2 is applied.
Mode 2	When a sample cup is used, the dilution ratio of SP.2 is applied. When a primary tube is used, the dilution ratio of SP.1 is applied.
Mode 3	The dilution ratio of SP.1 is always applied regardless of the type of the specimen container..
Mode 4	The dilution ratio of SP.2 is always applied regardless of the type of the specimen container..



Mode 3 has been set as default. When changing the mode of dilution ratio, please contact Tosoh local representatives.



If the number of tests for one specimen exceeds 5 (one STC cup is regarded as one test. The number of STC cups to be used depends on the dilution ratio.), the assay order registration is divided into multiple orders with the same ID. Therefore, the same numbers of specimens are also required so that each specimen is allocated to each assay order.

If a sorter is connected, up to 9 tests can be registered per specimen when using a 9tray sorter, up to 19 tests can be registered per specimen when using a 19tray sorter.

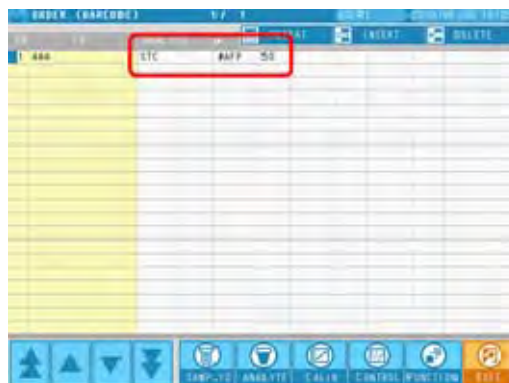
Section 8 System Operations

Note

When a dilution or pre-treatment is required for the analyte, the analyte and STC are automatically registered on the Order screen. The number of STC cups to be used depends on the dilution ratio.

1-Fold (No Dilution):	0 Cup
2 – 51-Fold:	1 Cup
52 – 1 000-Fold:	2 Cups

When the test for the analyte requires pre-treatment, one STC cup is required for that.



A creation of assay order is started from the Home screen. If another screen is shown, go back to the HOME screen by pressing the  key.

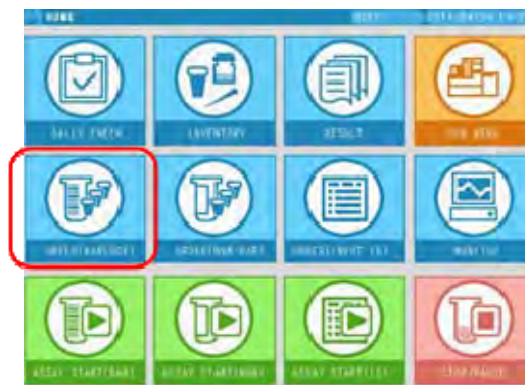


8.2.1. ORDER (BARCODE)

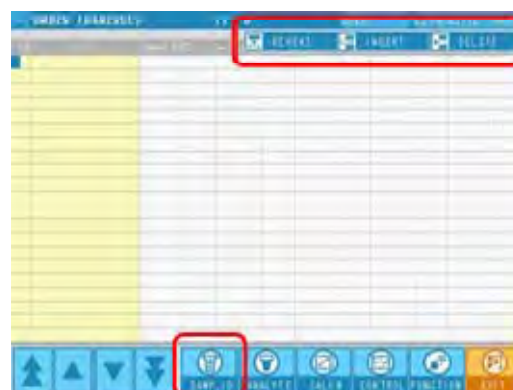
Press the  button to open the ORDER (BARCODE) screen.

- **Specimen ID**

On the Order screen, press the  button to enter specimen IDs. If specimen IDs have already been entered, press the  button to proceed to the analytes input step.



- Specimen ID should be registered with alphanumeric characters up to 16 digits.
- A handheld barcode reader (optional) can be used to read barcode labels and input specimen IDs.



Note

REPEAT: A new row is inserted under the cursor line and the order is copied.
INSERT: A new row is inserted above the cursor line and an Order Input screen opens.
DELETE: The cursor line is deleted.

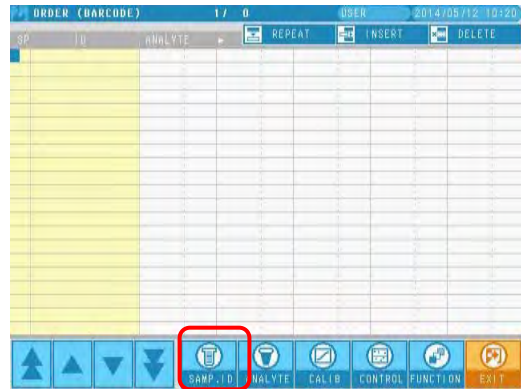
Note

Since 16 digits (the top 10 digits are for the name of the control) are used for TOSOH controls, it is recommended that less than 15 digits are used for specimen IDs.

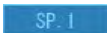
Section 8 System Operations

- Specimen Type**

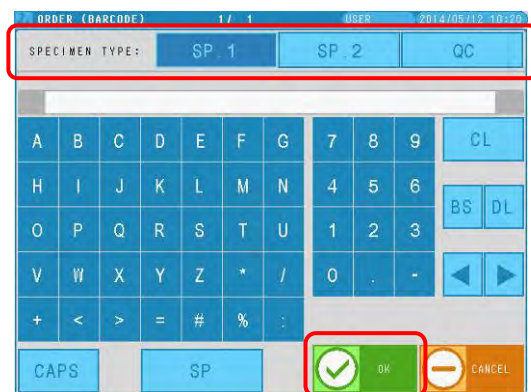
Press  button.



Select the specimen type with

   button on the

Order screen and then press  button.



- Analytes**

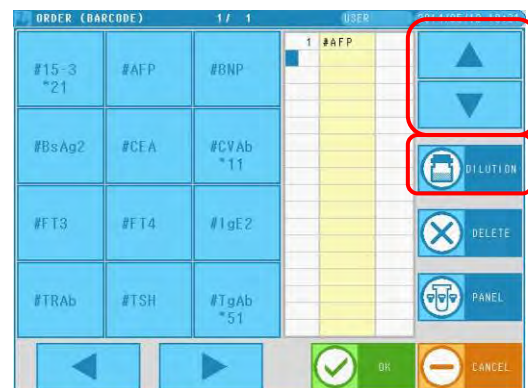
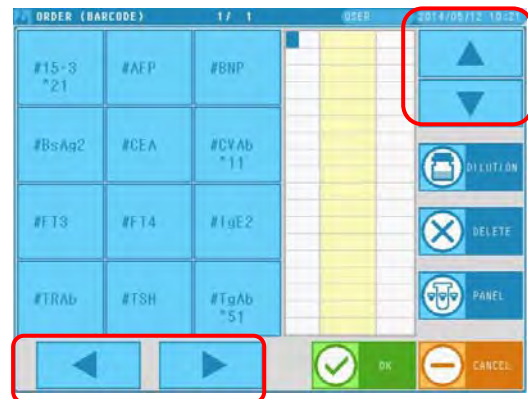
Select the analytes from the list of available analytes on the screen. If the analyte you want to input is not displayed, you can switch the shown analyte list by pressing

the   buttons.

If you want to add an analyte for a specimen, place the cursor on the analyte you desire

to add by pressing   buttons and press the analyte button. After

selecting the analyte, press  to open the Order screen so that the order for the next specimen can be input.



Section 8 System Operations

- Dilution request**

To change the dilution ratio, move the cursor on the analyte to be changed with

  buttons and press the

 button to display the dilution ratio input box.

Once the dilution ratio is input and the button  is pressed, the dilution ratio is set for the selected analyte and you go back to the screen for selecting analytes.



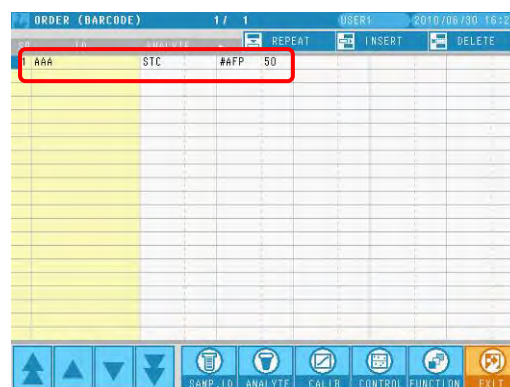
The dilution ratio is shown as on the right.

Once the  button is pressed, the order in which the dilution ratio has been set is registered on the Order screen.



On the Order screen, the registration is done with the required number of STC cups on the left of the analyte.

For STC cups, see **"8.3 How to set specimens and test cups."**



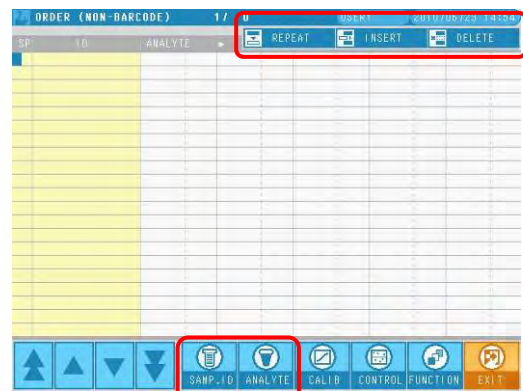
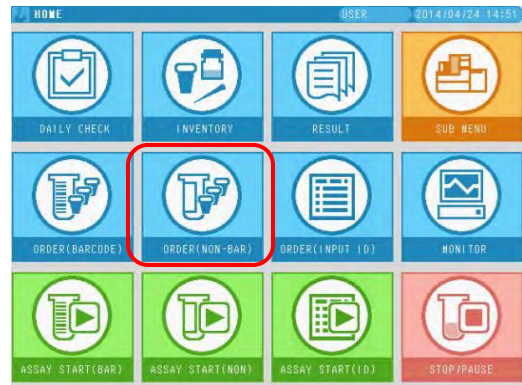
8.2.2. ORDER (NON-BARCODE)

Press the  button to open the ORDER (NON-BARCODE) screen.

- Specimen ID**

On the Order screen, press the  button to enter specimen IDs. If specimen IDs have already been entered, press the  button to proceed to the analytes input step.

- Specimen ID should be registered with alphanumeric characters up to 16 digits.



Note

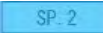
REPEAT: A new row is inserted under the cursor line and the order is copied.
INSERT: A new row is inserted above the cursor line and the Order Input screen opens.
DELETE: The cursor line is deleted.

Note

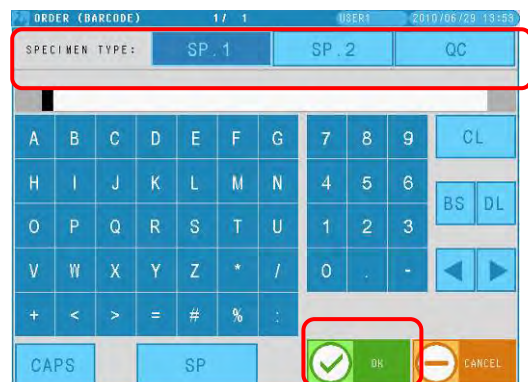
Since 16 digits (the top 10 digits are for the name of the control) are used for TOSOH controls, it is recommended that less than 16 digits are used for specimen IDs.

- Specimen Type**

Select the specimen type with

   buttons on

the Order screen and then press  button.



Section 8 System Operations

• Analytes

Select the analytes from the list of available analytes on the screen. If the analyte you want to input is not displayed, switch the shown analyte

list by pressing the   buttons.

When adding an analyte, place the cursor on the

analyte you desire to add by pressing 

 buttons and press the analyte button.

After selecting the analyte, press  to

open the Order screen so that the order for the next specimen can be input.



• Dilution request

To change the dilution ratio, move the cursor on the analyte to be changed with

  buttons and press the 

button to display the screen to input the new dilution ratio.



Once the dilution ratio is input and the button

 is pressed, the dilution ratio is set for

the selected analyte and you go back to the screen for selecting analytes.



The dilution ratio is shown as on the right.



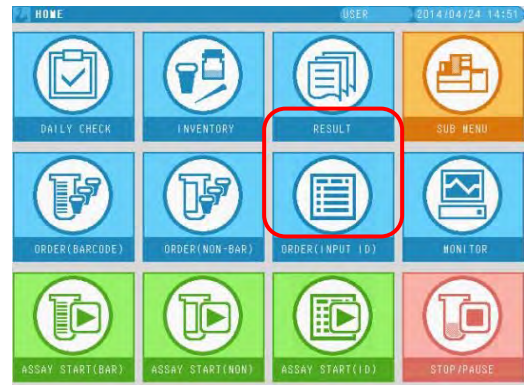
Section 8 System Operations

8.2.3. ORDER (INPUT ID)

Set specimens and test cups in the loader in advance. **See 8.3.1. Without a Sorter.**

- Specimen ID**

Press  the button on the Home screen to open the Order screen

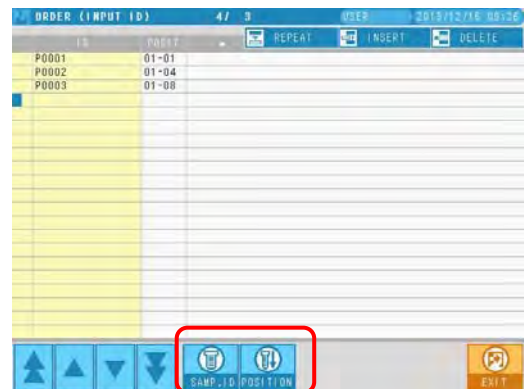


On the Order screen, input specimen IDs and the set position (POSIT) of the specimen.

Press the  button to input the specimen IDs.

To edit the set position of the specimen, press

the  button to proceed to the step to enter the set position of the specimen.

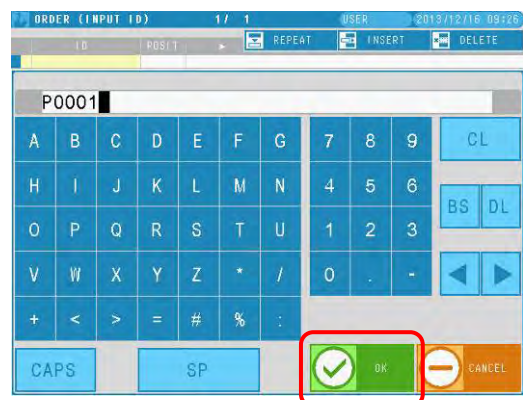


Note

REPEAT: A new row is inserted under the cursor line and the content of the row is copied.

INSERT: A new row is inserted above the cursor line and a specimen ID Input screen opens.

DELETE: The number of row(s) under the row the cursor is positioned will be deleted by the number entered here.



Section 8 System Operations

- **Set Position of specimen in the loader (POSIT).**

On the screen "Enter Sample Position", enter the positions in the sample rack and the position of the sample rack.

The set position of a specimen on the loader (POSIT) consists of two double-digit numbers. The first 2 digits represent the rack number from the beginning of the assays (it is not the barcode number attached to the sample rack). The second 2 digits represent the set position of the specimen in the sample rack.

For example:

"01-01" 1st rack's 1st position

"02-08" 2nd rack's 8th position

Press the  button to complete the input of the set positions of the specimens and make the next input request selectable.

When all the inputs are complete, press

the  button to go back to the Home screen.



Enter the rack number from 01 in sequence, and enter the specimen set position number from 1 through 10.



Note In INPUT ID mode, a work list cannot be created because the analytes are not entered. After an assay order is created, confirm that the specimen set position in the sample rack matches the created order (the specimen IDs and the set position of the specimen).

8.2.4. Accessory Function at Order Creation

Below the following 5 accessory functions and their use are reviewed: Panel, Panel for Control, Query at Specimen ID Input, Function Query and Function Download, and how to use them.

- **Panel**
Panel is the accessory function to make an assay request for a set of assay analytes to be used routinely by registering it once. For details, see **"10.9 PANELS."**
The use of Panel is described starting from the next page.
- **Panel for Control**
Panel for Control is the accessory function to register control materials to be used as QC materials. By calling the registered QC materials from the Order screen, you can make a request for controls assays easily.
- **Query at Specimen ID Input**
Query at Specimen ID Input is the accessory function to query the host computer about assay analytes when an assay order is created.
It queries automatically when a handheld barcode reader (optional) reads a specimen barcode label.
- **Function Query**
Function Query is the accessory function to query the host computer about assay analytes by placing the cursor on the input specimen ID on the Order screen and pressing the Query button among the Function keys.
- **Function Download**
Function Download is the accessory function to download all assay orders from the host computer by pressing the Download button among the Function keys on the Order screen.



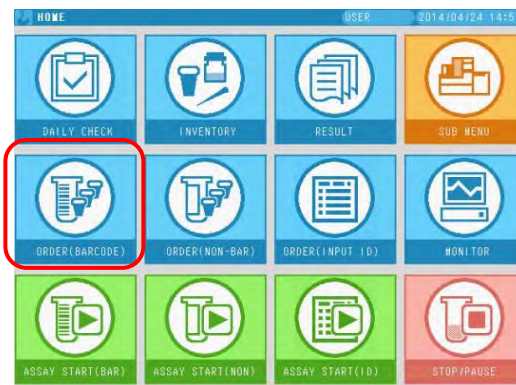
To use the Query or Download function, it is required that the AIA-900 is connected to the host computer via RS232C serial cable.

You cannot use any of the following functions simultaneously: the Query at Specimen ID Input, the Function Query and the Function Download. If this is done, the order may not be correctly transferred.

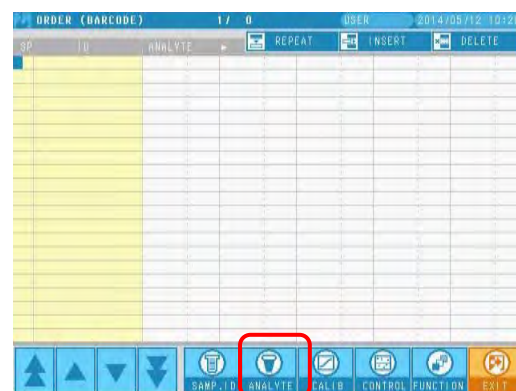
Section 8 System Operations

• PANEL

Press  button to open the ORDER (BARCODE) screen.



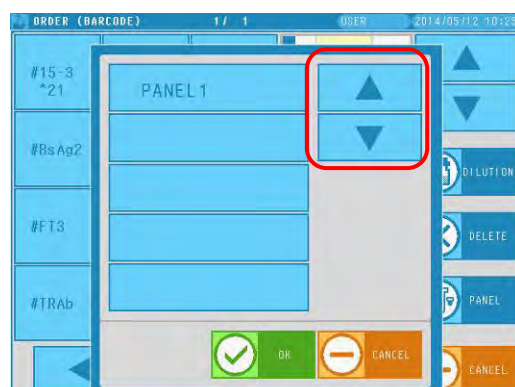
Press  button.



Press  button on the Order screen to display the list of registered panels. Select a panel to order and press the  button.



For panel registration, see "10.9 PANELS."

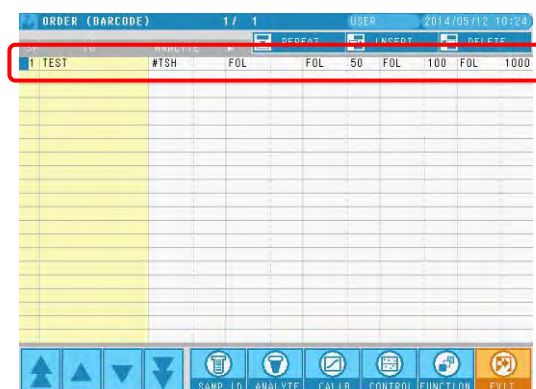
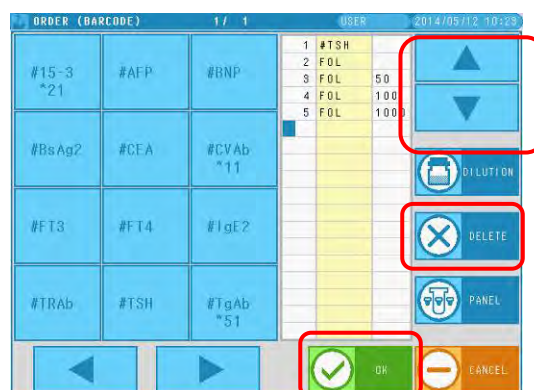


This function cannot be used in INPUT ID mode.

Section 8 System Operations

The analytes registered in the panel will be shown on the Analyte Selection screen. If you want to exclude an analyte from the panel, move the cursor to the analyte to be excluded on the Analyte Selection screen and press the  button.

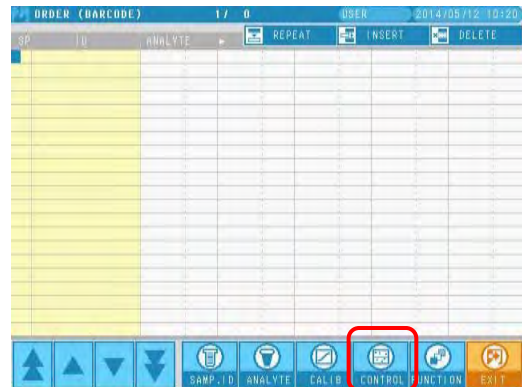
Once the  button is pressed, the displayed analytes are registered on the Order screen.



Section 8 System Operations

• PANEL FOR CONTROL

On the Order screen, press the  button to display the list of registered QC materials. By selecting a control to order and pressing the OK button, you can register the order of the control on the Order screen.



For registration of panel for control, see "10.10 CONTROL."

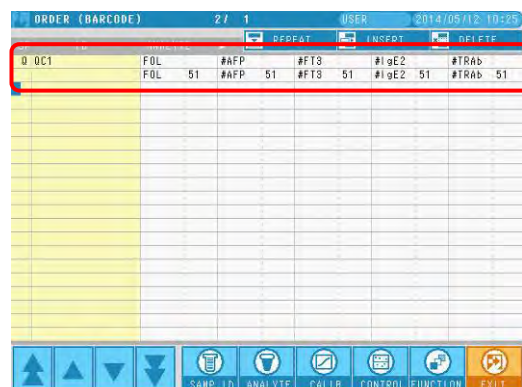


This function cannot be used in the INPUT ID mode.



Note

At the time a panel name is selected, the registered QC materials by the panel name are assayed. If you want to assay only some of the registered analytes, you can deselect the analytes by pressing the analyte names not to be assayed. The deselected analytes are displayed in light blue as shown on the right figure.



Section 8 System Operations

• QUERY AT SPECIMEN ID INPUT

When entering a specimen ID, you can send a query to the host computer to enter the assay order automatically.

To use query at specimen ID input, the following procedure is required.

(1) How to set Query at Specimen ID Input

On the Home screen, press the  button to open the sub menu.



On the sub menu, press the  button to open the HOST screen (host computer setting screen).



Set QUERY as "YES, MANUAL." TIMEOUT (Second) is the time to wait for a response from the host computer.



Section 8 System Operations

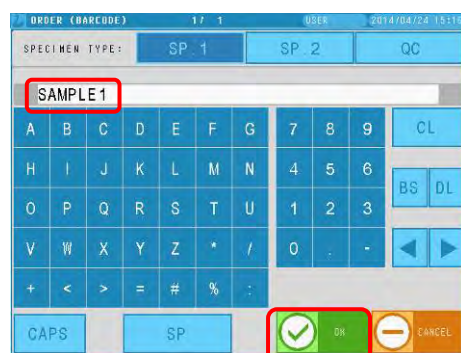
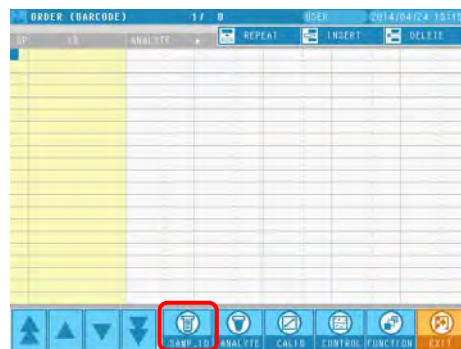
(2) How to use Query at Specimen ID Input

Specimen ID input

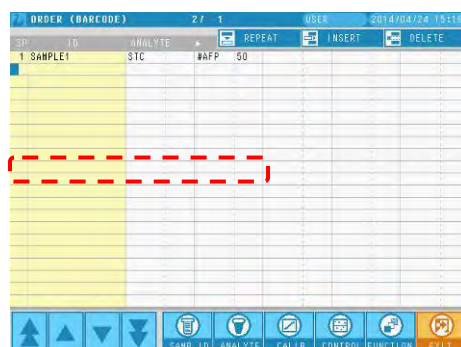
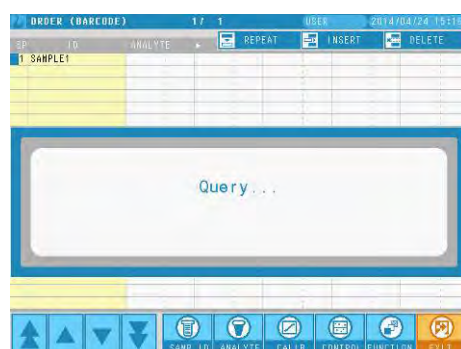


Press  button to open the ORDER (BARCODE) screen.

Enter a specimen ID and press the OK button on the ORDER (BARCODE) screen to send a query about the order to the host computer. Also, the specimen ID read from the specimen barcode on a specimen by the handheld barcode reader (optional) will be queried to the host computer about its order. The queried order is automatically displayed on the Order screen.



If after the query no order is found on the host computer, the message "No order" will be displayed and only specimen IDs will be registered on the Order screen. If communication with the host computer is timed out, an error message "No response from PC" will be shown.



Section 8 System Operations

• FUNCTION QUERY

When the FUNCTION QUERY is used, the order for the designated specimen ID is queried to the host computer.

(1) How to set FUNCTION QUERY

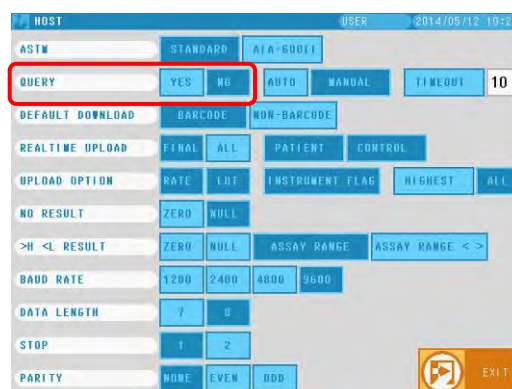
Select the  button on the Home screen to open the sub menu.



On the sub menu, press the  button to open the HOST screen (host computer setting screen).



Set as "QUERY NO."



Section 8 System Operations

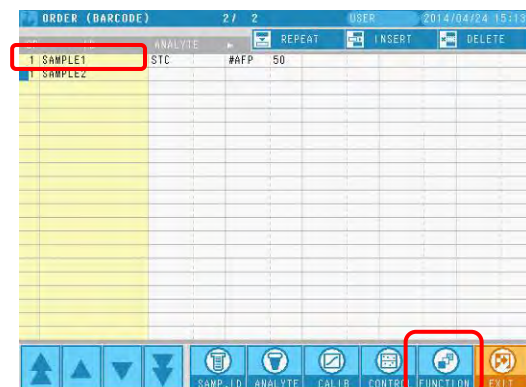
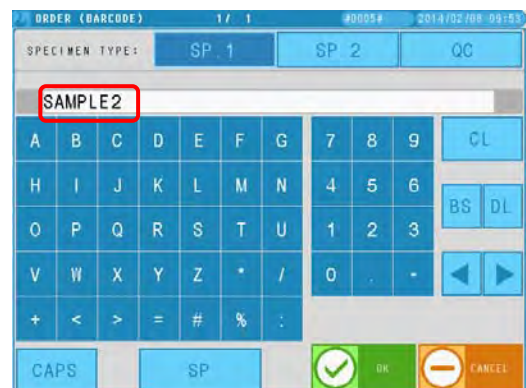
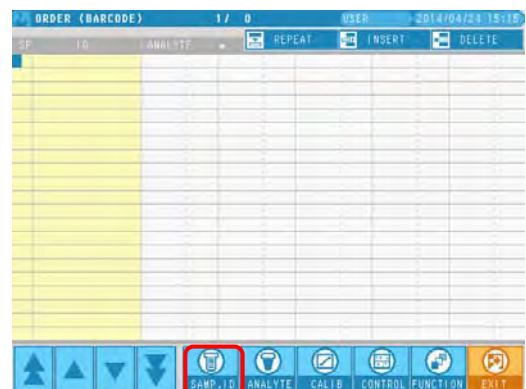
(2) How to use FUNCTION QUERY

Press  button to open the ORDER (BARCODE) screen.

Press the  button.

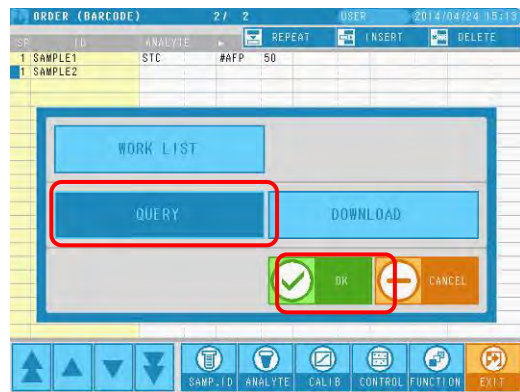
Enter a specimen ID and press the  button on the ORDER (BARCODE) screen.

Move the cursor on the input specimen ID for which you want to query the order to the host computer.
Press the FUNCTION button on the Order screen.

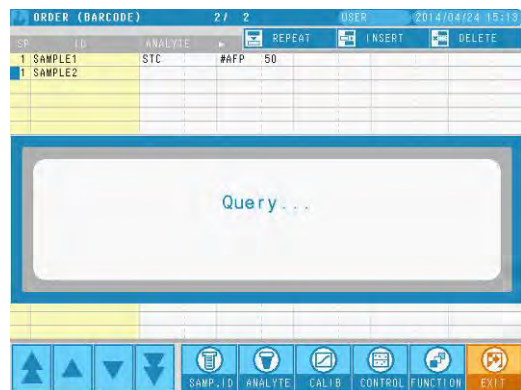


Section 8 System Operations

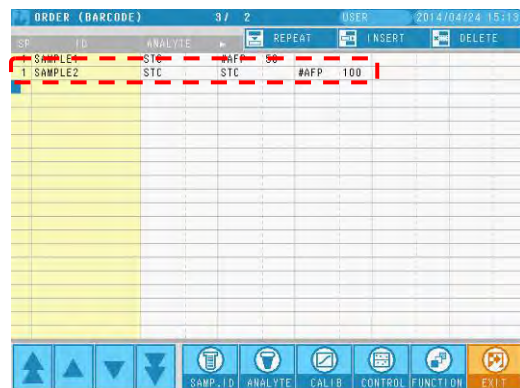
Press the QUERY button and then the OK button.



Once the order is queried to the host computer, the message "Query..." will be displayed on the screen.



After the message disappears, the order you queried will be shown on the Order screen.



Section 8 System Operations

• FUNCTION DOWNLOAD

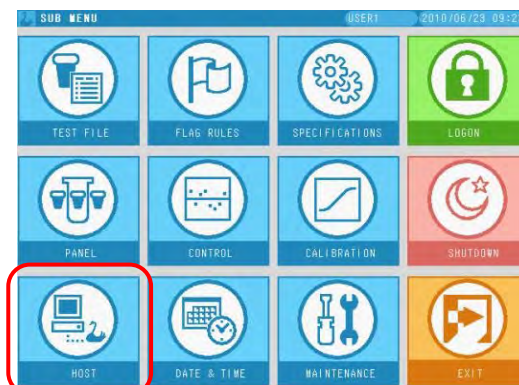
When you use FUNCTION DOWNLOAD, you can download all assay orders from the host computer.

1) How to set FUNCTION DOWNLOAD

On the Home screen, select the  button to open the sub menu.



On the sub menu, press the  button to open the HOST screen (host computer Setting screen).



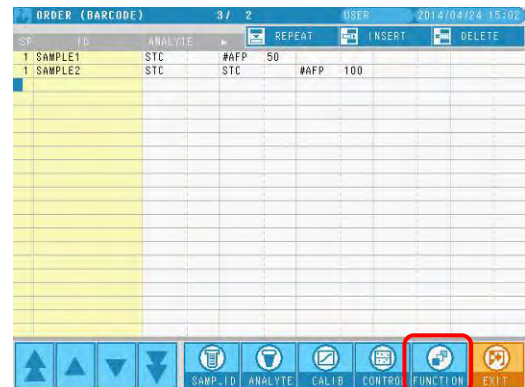
Set as "QUERY NO."



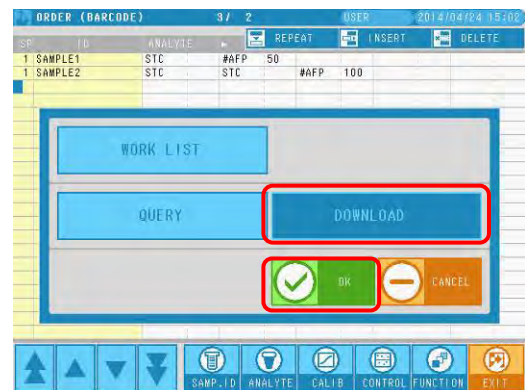
Section 8 System Operations

2) How to use FUNCTION DOWNLOAD

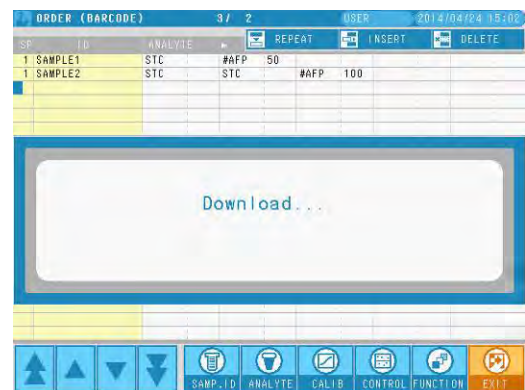
Press the FUNCTION button on the Order screen.



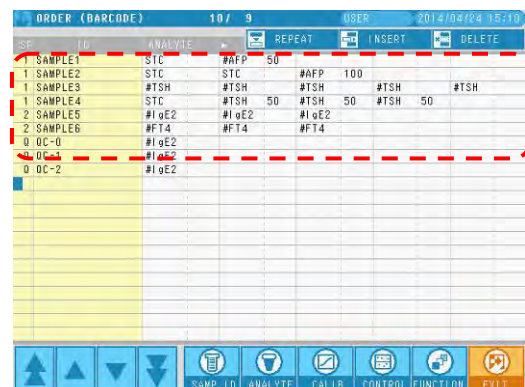
Press the DOWNLOAD button and then push the OK button.



A request for download of orders will be sent to the host computer and the message "Download..." will be shown.



Once the message disappears, the downloaded orders are shown on the Order screen.



The time required for downloading depends on the number of orders.

8.3. How to set specimens and test cups

- **About STC cups (Sample Treatment Cup)**

STC cups are the test cups used for specimen dilution or pre-treatment.

- **Specimen Dilution**

To assay an analyte which requires a specimen dilution, set STC cup(s) for specimen dilution immediately before the test cup for the analytes. The specimen diluted in the STC cup is dispensed into the test cup for the assay.

Up to 2 STC cups can be used according to dilution ratios. One STC cup is needed for a dilution of 2 - 51-fold and 2 STC cups are needed for a dilution of 52 - 1 000-fold. The specimen, STC cup(s) and a test cup are set in this order in a sample rack.

- **Specimen Pre-treatment**

Pre-treatment for 10 minutes is needed for some analytes.

Place an STC cup for specimen pre-treatment immediately before the test cup.

The pre-treatment for a specimen is performed in the STC cup and then the pre-treated specimen is dispensed into the test cup for the assay.

The specimen, an STC cup and a test cup are set in this order in a sample rack.

 Note

When a sorter is connected, STC cups and test cups are set in the sorter with trays.

 Note

For an assay which requires dilution and pre-treatment, the total number of required STC cups should be set immediately before the test cup.



If the required number of STC cups is not set for an analyte which requires dilution and pre-treatment, an IS flag is reported and the result cannot be obtained.

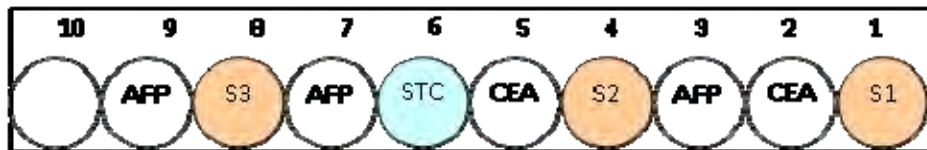
Section 8 System Operations

8.3.1. Without a Sorter

Example:

First Specimen (S1): CEA, AFP
Second Specimen (S2): CEA, AFP with 10-fold dilution
Third Specimen (S3): AFP

- 1) Prepare the specimens and the test cups.
- 2) Set the specimens and the test cups in a sample rack.
Set the specimen and the corresponding test cups next to it. Up to 5 test cups (including STC cups) can be set for a specimen. Set the test cups without leaving any empty positions between the test cups.



- 3) Set the sample rack in the loader and then set an end-marker on the 10th position of the sample rack, or alternatively set an empty sample rack next to the sample rack.



Print out a WORK LIST to prevent an error in setting the specimens and test cups (refer "Section 7 Calibration"). Set the specimens and test cups just as indicated in the WORK LIST.



If the end-marker or the empty sample rack cannot be detected, the sample rack with specimens and test cups will continue to go round. Make sure to set an end-marker or an empty sample rack next to the sample rack with specimens and test cups.



Do not place additional sample racks on the loader while the loader is running. Otherwise, sample racks cannot be advanced properly and assays may be suspended due to an error.

Section 8 System Operations

8.3.2. With a Sorter

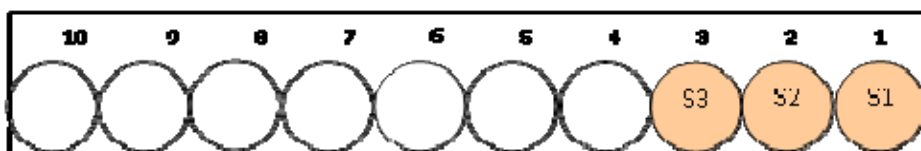
Example:

First Specimen (S1): CEA, AFP

Second Specimen (S2): CEA, AFP with 10-fold dilution

Third Specimen (S3): AFP

- 1) Prepare the specimens and the test cups.
- 2) Set the specimens in a sample rack.



- 3) Set the test cup trays of CEA, AFP and STC in the sorter.
- 4) Set the sample rack in the loader and then set an end-marker on the 10th position of the sample rack, or alternatively set an empty sample rack next to the sample rack.



Print out a WORK LIST to prevent an error in setting the specimens and test cups (refer "Section 7 Calibration"). Set the specimens and test cups just as indicated in the WORK LIST.



If the end-marker or the empty sample rack cannot be detected, the sample rack with specimens and test cups will continue to go round. Make sure to set an end-marker or an empty sample rack next to the sample rack with specimens and test cups.



Do not place additional sample racks on the loader while the loader is running. Otherwise, sample racks cannot be advanced properly and assays may be suspended due to an error.

8.4. Assay Start

Assays can be started from the Home screen. When the screen other than the Home screen is shown, press the  key to go back to the Home screen.

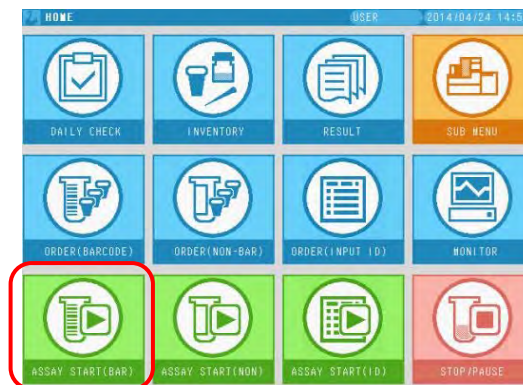
If specimens and test cups are prepared, press

the  button to display the screen to start assays.

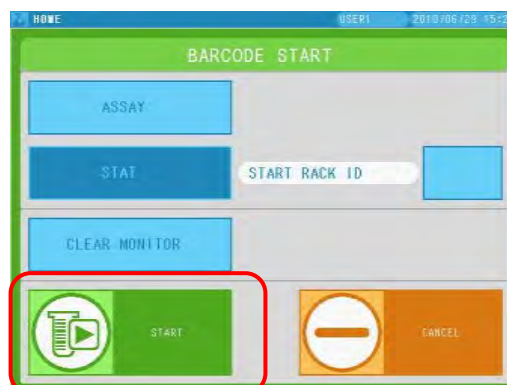


8.4.1. Assay Start BAR (Barcode)

On the Home screen, press the  button to open the screen to start assays.



Check the displayed content to start the assay and then press the  button.

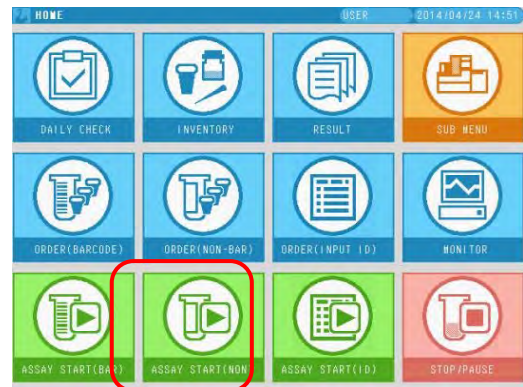


Note

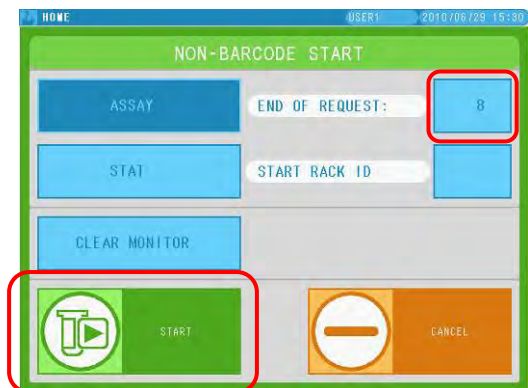
If an assay is started with the  button being selected while the monitor screen status is “STOP” (refer 8.5.1), the content of the previous assay monitor will be deleted.

8.4.2. Assay Start NON (non-barcode)

On the Home screen, press the  button to open the screen to start assays.



Check the display content to start the assay and then press the  button.

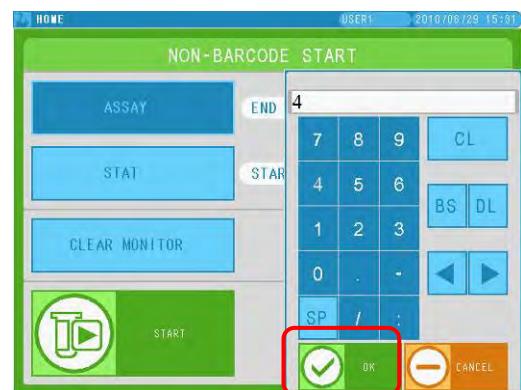


The number of the registered orders is displayed in the END OF REQUEST. To assay

only some of them, press the  button to open the numeric keypad.

Enter the number of orders to do assays and press the  button to change the END OF REQUEST number and go back to the screen to confirm it.

In the right figure, the eighth order from the first are registered. The fourth order from the first will be measured by entering "4" in END OF REQUEST.



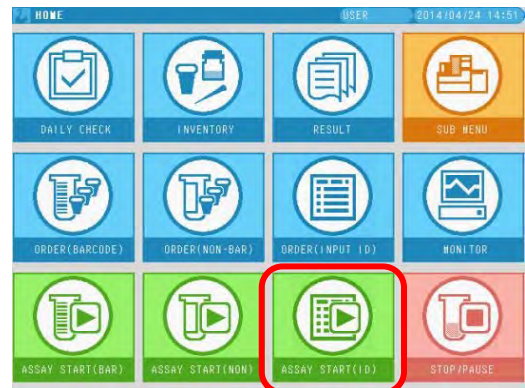
Note

If an assay is started with the  button being selected while the monitor screen status is "STOP" (refer 8.5.1), the content of the previous assay monitor will be deleted.

Section 8 System Operations

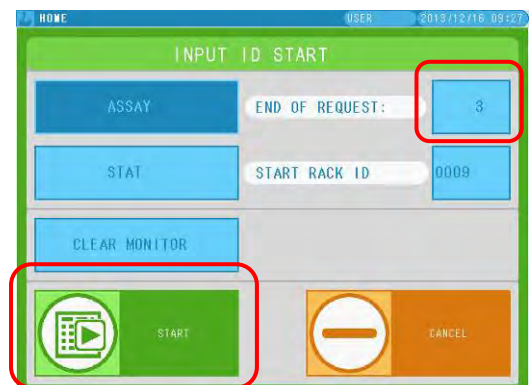
8.4.3. ASSAY START (ID)

On the Home screen, press the  button to open the screen to start assays.



Set the sorter when not in use to INPUT ID Mode. To select whether or not to use the sorter, refer to the CUP SORTER in the “10.7 SPECIFICATIONS.”

Check the displayed content on the screen to start the assays. The number of the registered orders is shown in The END OF REQUEST in the top right corner of the screen. Press the  button to start the assays.



If you start assays with assigning the order of the “END OF REQUEST”, the other requests will remain on the Order screen. Since the next batch of assays will be started from rack number 1 again, to assay the remaining requests, re-enter the rack number of the sample rack in which the specimens are set on the screen to prepare the requests.

Note

If an assay is started with the  button being selected while the monitor screen status is “STOP” (refer 8.5.1), the content of the previous assay monitor will be deleted.

8.5. Operation during Assays

8.5.1. Monitor Screen

Progress of the assay can be checked on the MONITOR screen. Press the MONITOR button on the Home screen to open the MONITOR screen.



- On the bottom of the MONITOR screen, device status, reagent shortage information and the number of remaining assays are shown as well as the stand-by batch.
- The colour of the mark on the left of the analyte name changes from grey  to blue  for an analyte for which sampling is completed. On the right of the specimen ID, the scheduled completion time of the assay is displayed. Whenever each sampling is completed, the scheduled completion time will be updated.
- The colour of the mark on the left of the analyte name changes to green  for an analyte for which the assay is completed.
(If an assay was not completed due to an error, aborting the assay, etc., the mark will also change to green .)

The screen on the right indicates that the assays have been completed up to the 2nd analyte of the 6th specimen and the sampling for the last analyte of the 6th specimen has been completed and is on-going.



SP	ID	TIME	ANALYTE
C2009404101056	15:12	#1	gE2
C2009404102056	15:14	#1	gE2
C2009404103056	15:16	#1	gE2
C2009404104056	15:18	#1	gE2
C2009404105056	15:20	#1	gE2
C2009404106056	15:22	#1	gE2

STATUS : ASSAY WAIT BATCH : 0

	Grey:	Not yet sampled
	Blue:	Sampled
	Green:	Assay Completed
	Red:	Under Re-testing

8.5.2. STAT Specimen (priority assay for an emergency specimen)

A STAT specimen can be assayed by interrupting the batch of assays which has already started.

A STAT specimen is assayed preferentially by assigning the ID of the sample rack in which the specimen is set. After sampling of the STAT specimen is completed, the assay for the specimen being processed at the interruption will be resumed.



- To properly run the STAT assays, it is required that different rack IDs are attached to all the sample racks.
- It is impossible to start another STAT assay while one STAT assay is already running.
- For calibration or assaying of control materials, the STAT assay cannot be used.
- When sample racks are used in "NON ROTATION MODE", the STAT assay cannot be performed.
- Make sure the sample rack for the STAT assay is placed after the last sample rack for which you are currently ordering assays. Set an end-marker to the sample rack for the STAT assay or an empty sample rack after the sample rack for the STAT assay in a normal way.
- Do not remove any sample racks during the STAT assay.
- If the result of the STAT assay becomes RETEST (auto retest), it is treated as RESCHED (rescheduled).
- If no sample rack with the specified ID for the STAT assay is found, the assay suspended by the STAT assay will be resumed.
- When the STAT assay is performed in AUTO Mode (non-barcode assay), the specimen ID is assigned automatically as Sddhmm-AA BB-CCC.
dd: Day, hh: Hour, mm: Minute
AA: Ordinal Number of the Sample Rack Number used in the STAT assays
BB: Specimen Position in Sample Rack
CCC: Serial Number

Section 8 System Operations

• How to assay STAT specimens

- (1) Make an order for the STAT specimen on the Order screen. It is not required to make an order in AUTO mode.

- (2) On the screen to start assays, press the

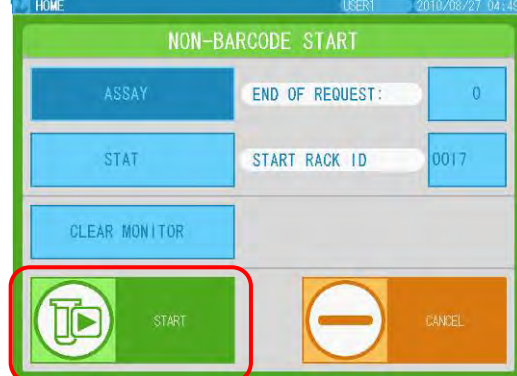
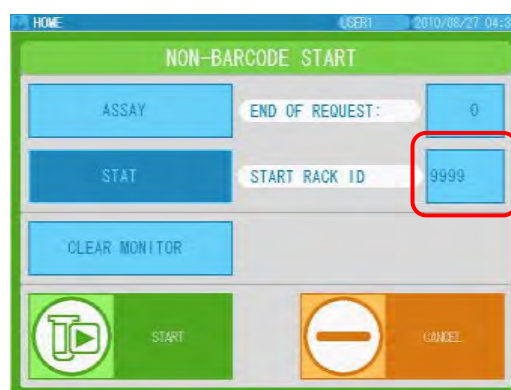
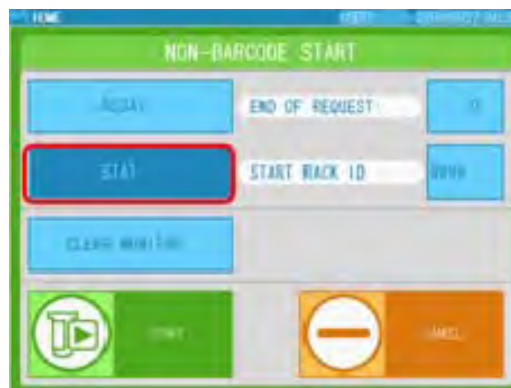


- (3) Enter the rack ID of the sample rack in which the STAT specimen is set by

pressing the START RACK ID button.

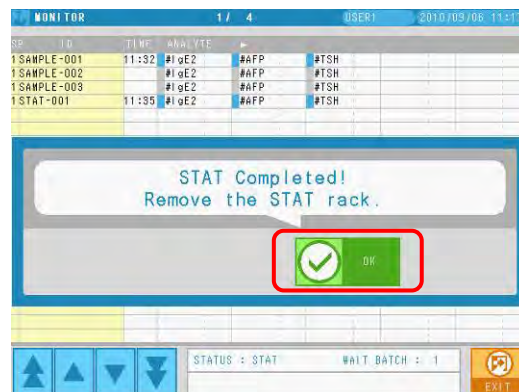
- (4) Either set the endmarker on the sample rack in which the STAT specimen is set, or place an empty sample rack after the sample rack.

- (5) Press the start button to start the STAT assay.



Section 8 System Operations

- (6) If the sampling of the STAT specimen is completed successfully, the message: "STAT Completed! Remove the STAT rack." will pop up. Then, remove the sample rack in which the STAT specimen is set and press the  button. The system will go back to the point where the STAT assay interrupted and assays will be resumed.



Note

Although the example above was shown in NON-BARCODE assay, the STAT assay in BARCODE assay and INPUT ID assay is processed in the same way.

8.5.3. Addition of Assays

Even during an assay, it is possible to make a request to add and start the assays. You can add even in an assay mode that is different from the current assay mode. The operation for additional assays can be executed by the same steps as for a normal assay. An end-marker or an empty sample rack is required for each batch unit. Add the sample rack to be assayed additionally on the sample loader while it is not running. If a sample rack is added while the sample loader is running, the sample rack may not be forwarded properly.



If it takes a long time to stop the sample loader, use the PAUSE function to suspend the Sample loader. For the details of the PAUSE function, see " 8.5.4 How to STOP Assay, PAUSE / CONTINUE."

8.5.4. Stop and Pause / Continue Assays

Press the  button on the Home screen to open the STOP/PAUSE screen.



- **STOP Assay**

The AIA-900 stops automatically after the end of assays. You can stop the assay by stopping the operation. If you stop (abort) the assay, an SE flag is added to the result of the assay that has not been completed.

Press the  button to stop assays on the STOP / PAUSE ASSAY screen. Once you press this button, you cannot cancel it.



- **PAUSE / CONTINUE assay**

When you set an additional sample rack, if you cannot set the specimen in time, or if it seems the reagents are running short, you can suspend the assay by pressing PAUSE. The assaying of the specimen that has already been sampled continues even during a PAUSE.

On the STOP / PAUSE ASSAY screen,

press the  button to suspend the assays. Then the assays will be suspended when the sampling for the next specimen is completed.

If you want to resume the assays, press the

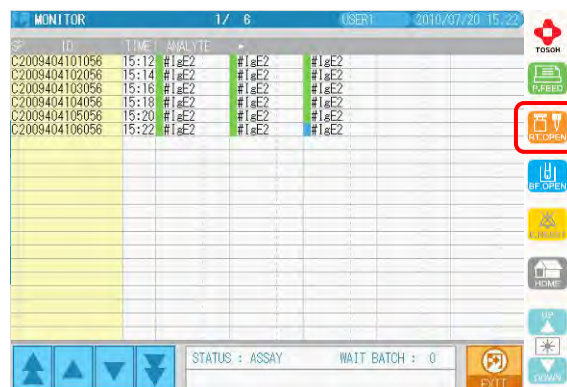
 button on the STOP / PAUSE ASSAY screen.



8.5.5. Add Reagents and Tips during Assay

If you need to add a reagent (including a sample diluting solution) or sample tips during

assays, press the  key on the right of the display to release the lock of the reagent and tip cover and then set the reagent (including sample diluting solution) or sample tips. For details about setting of reagent bottles or sample tips, see **"Section 5 System Preparations."**



During assays of analytes with 2-step reaction or needing pre-treatment, do not keep the reagent and tip cover open for a long time. While the cover is open, if the time for dispensing a CONJUGATE or PRETREATMENT reagent comes, the assay is skipped and an SP flag is given without any concentration values and ratio values.

When an analyte of with 2-step reaction or needing pre-treatment is assayed, make sure to set enough reagents and sample tips before the assay is started.

When the LED light of RT.OPEN under the LCD display blinks red, the time for dispensing a CONJUGATE or PRETREATMENT reagent is scheduled within 2 minutes.

While the LED is blinking (red), do not press the  key.

While the lock of the reagent and tip cover is released, an alarm message will be displayed together with an alarm sound 2 minutes before dispensing CONJUGATE or PRETREATMENT reagent. In such case, immediately close the reagent and tip cover.

8.6. Assay Results

8.6.1. How to see assay results

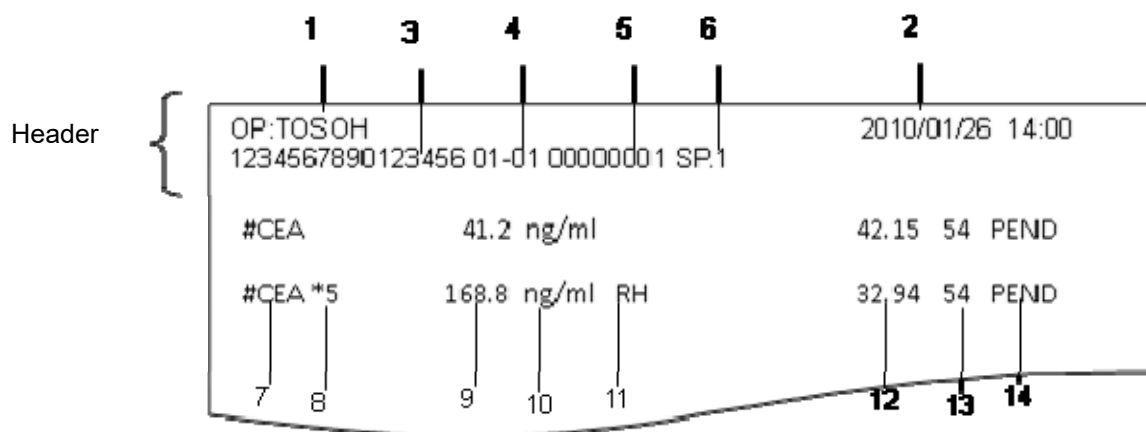
Up to 1,024 assay results can be stored in the internal memory of the AIA-900. Assay results are printed from the printer sequentially as soon as each assay is completed. (Real time print function)

However, due to differences in reaction (process) time among analytes, assay results may be printed out in a different sequence from the one in the order.



Results are displayed on the RESULT screen in a sequence set by the order. If you want to print out assay results in a sequence set by the order, print them from the RESULT screen. (See 8.6.2 Assay Result Screen)
If you do not use the real time print function, turn off the function via Mode Setting. (See “REALTIME PRINTOUT” in 10.7 SPECIFICATIONS)

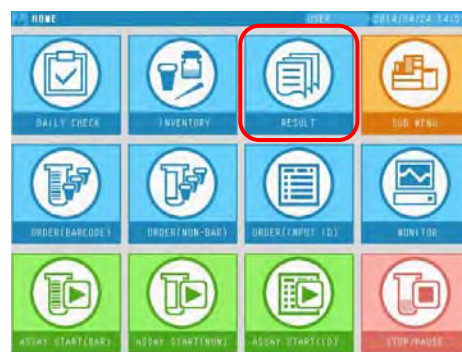
<< Example of real time printing of assay results >>



- (1) Operator's name
- (2) Assay Date and Time
- (3) Specimen ID (Up to 16 digits)
- (4) Specimen Position (Sample Rack Number-Position number in the Rack)
- (5) Rack ID (Blank if not entered)
- (6) Specimen Type
 SP.1: Specimen Type 1, SP.2: Specimen Type 2, CALIB: Calibrator, QC: Control
- (7) Analyte Name
- (8) Dilution Ratio
- (9) Assay Value: Concentration
- (10) Unit
- (11) Flag: Device Flag, Calculation Flag, Judgment Flag
- (12) Assay Value: Rate (Unit: nM/sec)
- (13) Lot Number of Test Cup
- (14) Assay Result Status
 PEND: Pending, FINL: Finalized, REJE: Rejected

8.6.2. Assay Result Screen

Press the  button on the Home screen to open the RESULT screen.



Assay results are shown as in the right figure. See the following table for details of each column.

	Column name	Meaning
1	DATE& TIME	Displays the assay date and time corresponding to the assay results selected
2	STATUS	Displays the status of the assay results selected. PENDING: assay result status "Pending", FINAL: assay result status "Finalized," REJECT: assay result status "Rejected"
3	OPERATOR	Displays the name of the operator corresponding to the assay results selected
4	SP	Displays the type of specimen. 1: SP.1, 2: SP.2, C: Calibrator, Q: Control
5	ID	Displays the specimen ID.
6	POSIT	Displays the Sample Rack No. and the rack position No. AA-BB-AA: Rack No., BB: Rack position No.
7	ANALYTE	Displays the analyte name. If the specimen is diluted, the dilution ratio is also displayed.
8	CONC	Displays the assay result (concentration value)).
9	LOT	Displays the lot No. of the test cup.
10	RATE	The assay result (rate value).
11	FLAGS	Displays the instrument flag, calculation flag, and the judgment flag assigned during the assay. If a flag is not attached, this area will be blank.
12	TX	Displays the status of sending the results to the host computer. I: Not sent, X: Sent

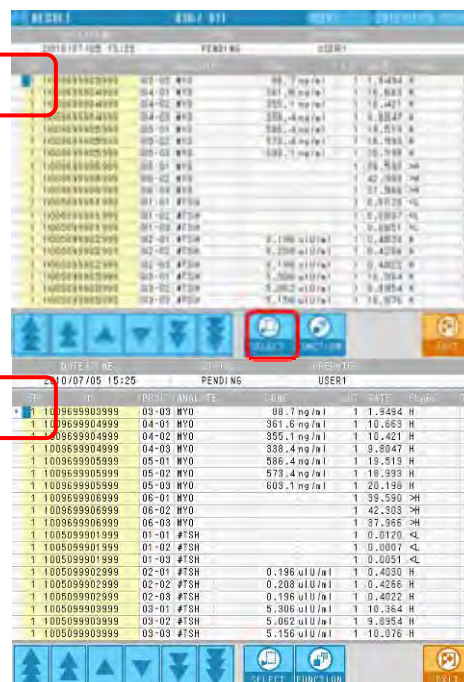
The data on the RESULT screen is displayed in the ordered sequence rather than the sequence in which the assay results were obtained. This function enables the assay results to be output in the ordered sequence after the end of the assays.

Section 8 System Operations

8.6.3. Selection of Assay Results

To print, delete or re-calculate assay results, it is required to select the data.

- (1) Move the cursor  over a specimen ID you want to select and press the  button.



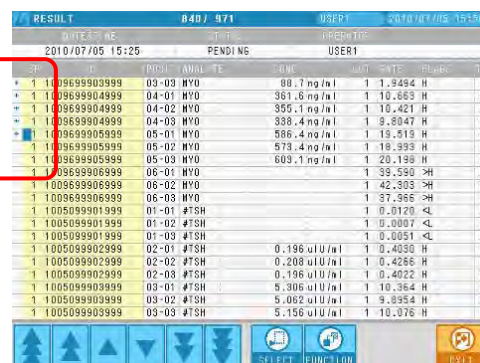
SP	ID	PROB	ANAL	TE	CONC	UNIT	DATE	PLATE	T
1	100599903999	03-03	MYO		88.1 ng/ml	1	1.9494 H		
1	100599904999	04-01	MYO		361.6 ng/ml	1	10.665 H		
1	100599904999	04-02	MYO		395.1 ng/ml	1	10.421 H		
1	100599904999	04-03	MYO		338.4 ng/ml	1	9.8047 H		
1	100599905999	05-01	MYO		586.4 ng/ml	1	18.515 H		
1	100599905999	05-02	MYO		573.4 ng/ml	1	18.393 H		
1	100599905999	05-03	MYO		603.1 ng/ml	1	20.198 H		
1	100599906999	06-01	MYO			1	39.550 -H		
1	100599906999	06-02	MYO			1	42.303 -H		
1	100599906999	06-03	MYO			1	37.366 -H		
1	100599901999	01-01	PTSH			1	0.0120 <L		
1	100599901999	01-02	PTSH			1	0.0007 <L		
1	100599901999	01-03	PTSH			1	0.0051 <L		
1	100599902999	02-01	PTSH		0.196 uIU/ml	1	0.4030 H		
1	100599902999	02-02	PTSH		0.208 uIU/ml	1	0.4266 H		
1	100599902999	02-03	PTSH		0.196 uIU/ml	1	0.4022 H		
1	100599903999	03-01	PTSH		5.306 uIU/ml	1	10.364 H		
1	100599903999	03-02	PTSH		5.062 uIU/ml	1	9.8954 H		
1	100599903999	03-03	PTSH		5.156 uIU/ml	1	10.076 H		

- (2) The mark  will appear at the beginning of the line.

- (3) Assign the selection area by going up or down

the cursor with the  buttons.

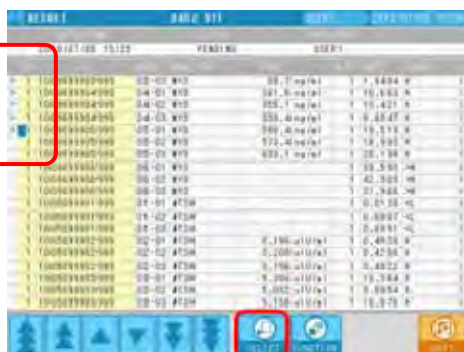
The cursor can be moved 1 line with  buttons, 19 lines (1 page) with  buttons and 95 lines (5 pages) with  buttons.



SP	ID	PROB	ANAL	TE	CONC	UNIT	DATE	PLATE	T
1	100599903999	03-03	MYO		88.1 ng/ml	1	1.9494 H		
1	100599904999	04-01	MYO		361.6 ng/ml	1	10.665 H		
1	100599904999	04-02	MYO		395.1 ng/ml	1	10.421 H		
1	100599904999	04-03	MYO		338.4 ng/ml	1	9.8047 H		
1	100599905999	05-01	MYO		586.4 ng/ml	1	18.515 H		
1	100599905999	05-02	MYO		573.4 ng/ml	1	18.393 H		
1	100599905999	05-03	MYO		603.1 ng/ml	1	20.198 H		
1	100599906999	06-01	MYO			1	39.550 -H		
1	100599906999	06-02	MYO			1	42.303 -H		
1	100599906999	06-03	MYO			1	37.366 -H		
1	100599901999	01-01	PTSH			1	0.0120 <L		
1	100599901999	01-02	PTSH			1	0.0007 <L		
1	100599901999	01-03	PTSH			1	0.0051 <L		
1	100599902999	02-01	PTSH		0.196 uIU/ml	1	0.4030 H		
1	100599902999	02-02	PTSH		0.208 uIU/ml	1	0.4266 H		
1	100599902999	02-03	PTSH		0.196 uIU/ml	1	0.4022 H		
1	100599903999	03-01	PTSH		5.306 uIU/ml	1	10.364 H		
1	100599903999	03-02	PTSH		5.062 uIU/ml	1	9.8954 H		
1	100599903999	03-03	PTSH		5.156 uIU/ml	1	10.076 H		

- (4) After assigning the selection area, press the

 button again to change the mark at the beginning of the line to . Then the selection area is determined. Press the  button to display the screen for selecting a processing method.



SP	ID	PROB	ANAL	TE	CONC	UNIT	DATE	PLATE	T
1	100599903999	03-03	MYO		88.1 ng/ml	1	1.9494 H		
1	100599904999	04-01	MYO		361.6 ng/ml	1	10.665 H		
1	100599904999	04-02	MYO		395.1 ng/ml	1	10.421 H		
1	100599904999	04-03	MYO		338.4 ng/ml	1	9.8047 H		
1	100599905999	05-01	MYO		586.4 ng/ml	1	18.515 H		
1	100599905999	05-02	MYO		573.4 ng/ml	1	18.393 H		
1	100599905999	05-03	MYO		603.1 ng/ml	1	20.198 H		
1	100599906999	06-01	MYO			1	39.550 -H		
1	100599906999	06-02	MYO			1	42.303 -H		
1	100599906999	06-03	MYO			1	37.366 -H		
1	100599901999	01-01	PTSH			1	0.0120 <L		
1	100599901999	01-02	PTSH			1	0.0007 <L		
1	100599901999	01-03	PTSH			1	0.0051 <L		
1	100599902999	02-01	PTSH		0.196 uIU/ml	1	0.4030 H		
1	100599902999	02-02	PTSH		0.208 uIU/ml	1	0.4266 H		
1	100599902999	02-03	PTSH		0.196 uIU/ml	1	0.4022 H		
1	100599903999	03-01	PTSH		5.306 uIU/ml	1	10.364 H		
1	100599903999	03-02	PTSH		5.062 uIU/ml	1	9.8954 H		
1	100599903999	03-03	PTSH		5.156 uIU/ml	1	10.076 H		

Note

You cannot assign discontinuous assay results as a selection area.

Section 8 System Operations

8.6.4. Printing Assay Results (PRINT)

- Prints the selected assay results.

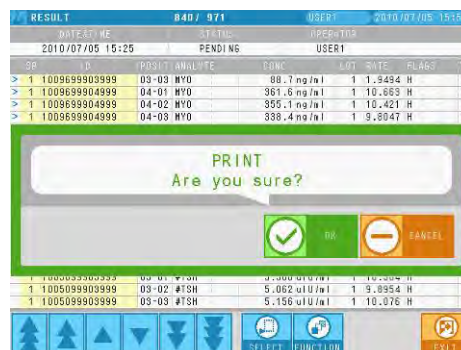
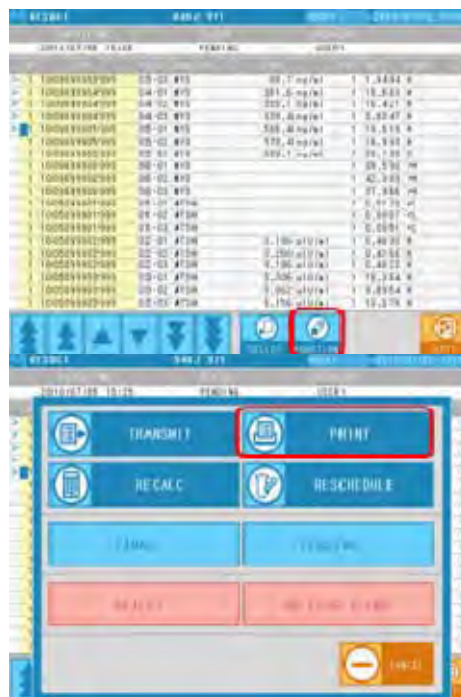
(1) After assigning the selection area, press the



button to select a processing method.

(2) On the screen, select the PRINT and press it.

(3) Press the button to start printing.

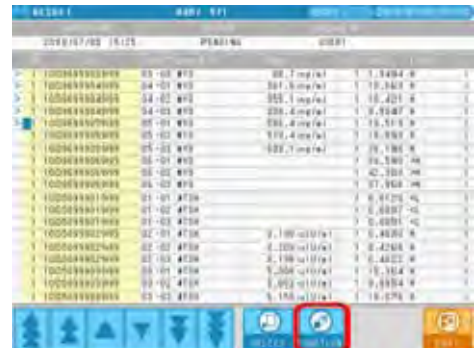


Section 8 System Operations

8.6.5. External Output of Assay Results (TRANSMIT)

- Sends the selected assay results to the host computer.

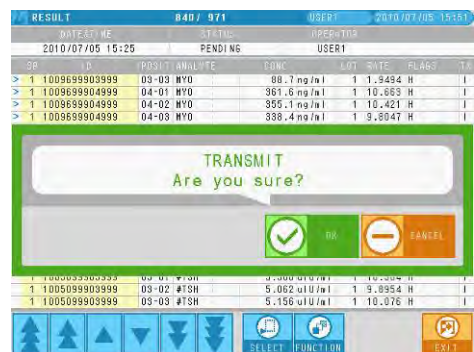
- (1) After assigning a selection area, press the  button to select a processing method.



- (2) On the screen, select the  and press it.



- (3) Press the  button to send the results to the host computer



8.6.6. Confirmation of Assay Results

■ RECALC

For an assay result given a **NC** flag or **CV** flag, the concentration value can be re-calculated by creating a new calibration curve. At first, select the data to be re-calculated following the instruction shown in "8.6.3 Selection of Assay Results."



NC: Is given if there is no calibration curve for the analyte or lot number.

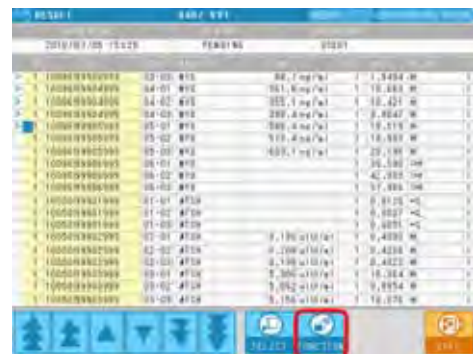
CV: Is given if the calibration curve has expired.

If 60 days have passed after the expiry of the calibration curve, the CV flag turns into a NC flag.

(1) After assigning a selection area, press the



button to select a processing method.



(2) On the screen, press the



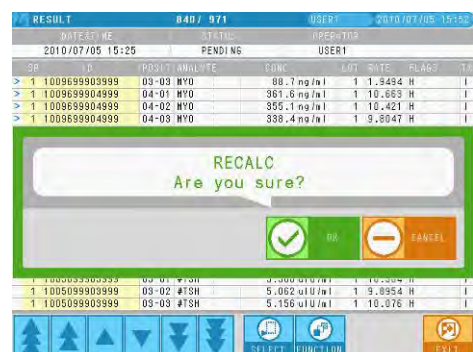
button.



(3) Press the



button to re-calculate the selected data.



The original assay results in the internal memory of the AIA-900 are overwritten with the re-calculated assay results.

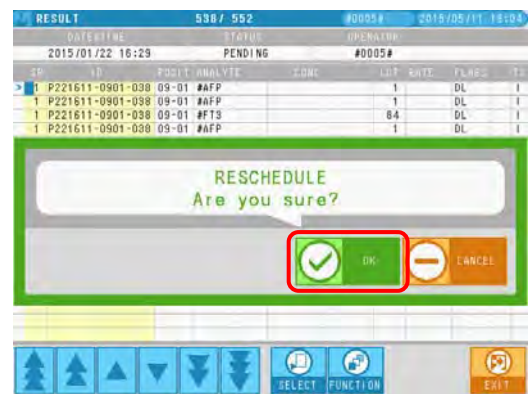
Section 8 System Operations

■ RESCHEDULE

Re-schedule assays the selected assay results again.

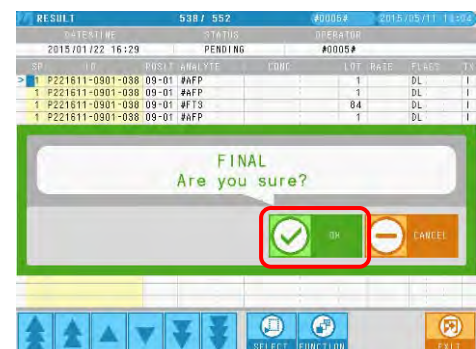
Another order is created on the Assay Order screen for the BARCODE or NON-BARCODE mode depending on the method by which the selected assay result was obtained.

Assay results obtained in INPUT ID method cannot be re-scheduled.



■ FINAL

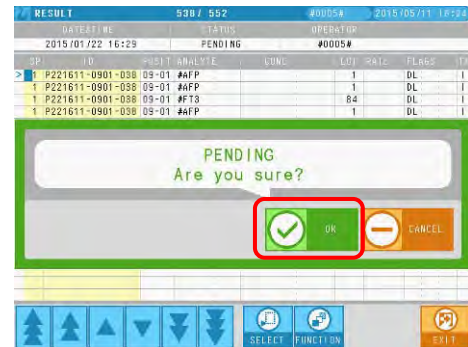
The status for the selected assay results is changed into FINAL.



Section 8 System Operations

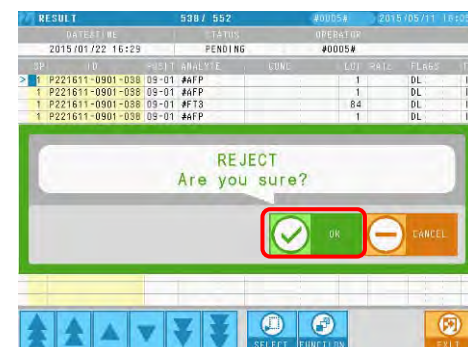
■ PENDING

The status for the selected assay results is changed into PENDING.
However, an assay result of FINAL status cannot be changed into PENDING.



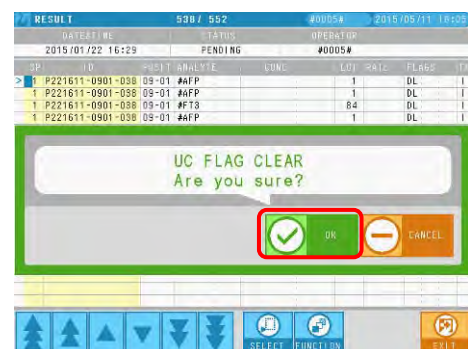
■ REJECT

The status of the selected assay results is changed into REJECT.
However, an assay result of FINAL status cannot be changed into REJECT.



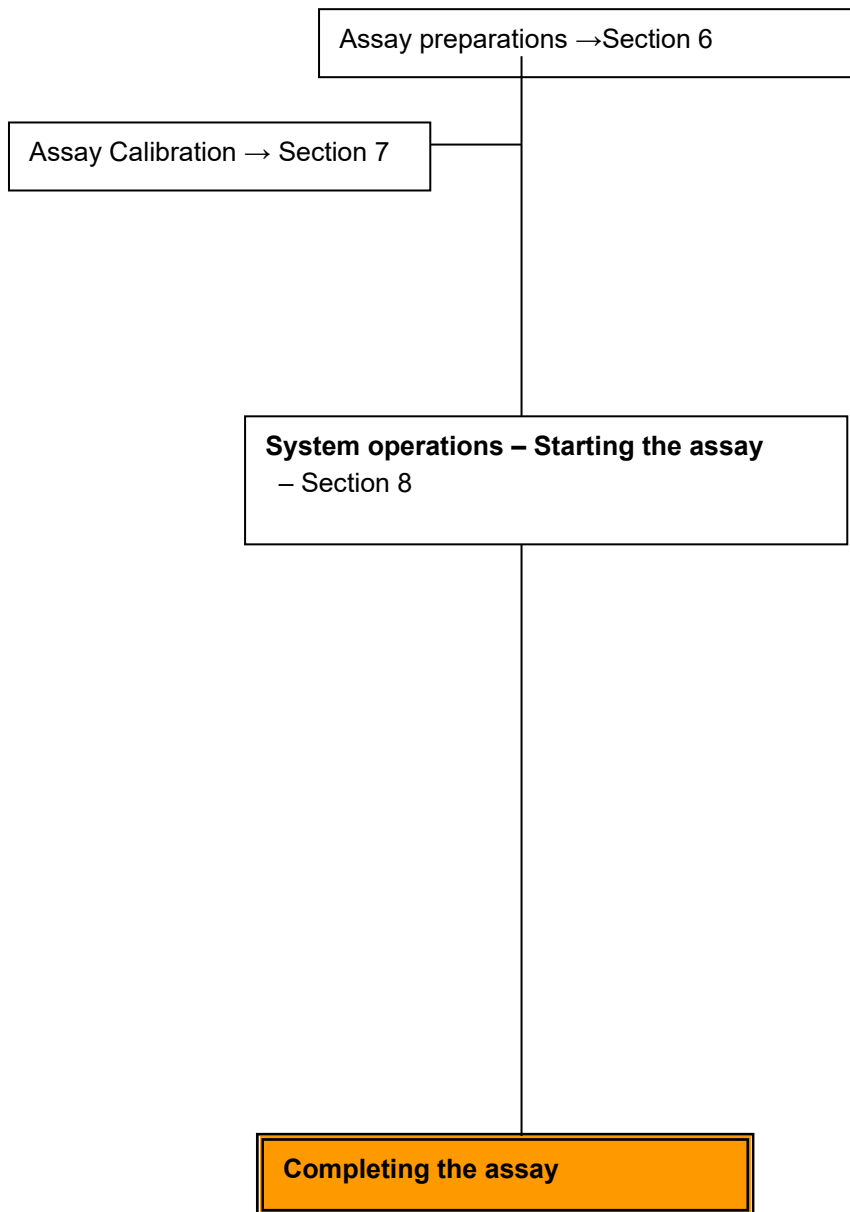
■ UC FLAG CLEAR

The UC flag which was given to an assay result can be cleared if clogging of the sample did not occur.
However, the UC flag given to an assay result of FINAL status cannot be cleared.



Section 9 System Shutdown

9.1. Introduction



9.2. Shutdown

At the end of work, be sure to replace the liquid in the substrate tube. If you leave the substrate in the tube, moisture may evaporate and the reagent may dry out in the flow path. Also, degradation of the substrate may cause rising of background during assays.



Replace the substrate in the tube with 70% ethanol or 70% isopropyl alcohol solution.

If you replace the substrate with distilled water, the inside of the tube may become contaminated during storage, causing the background of the substrate to rise.

9.2.1. Procedure

- (1) After assays, remove the used sample cups, primary tubes, and test cups.
- (2) Remove the substrate bottle, and install a bottle containing 70% ethanol or 70% isopropyl alcohol.



- Seal the substrate bottle with a clean silicone cap, or the like, and store the bottle in a refrigerator.
- There is no need to store the diluent or washer in a refrigerator, so the containers may be left in place.

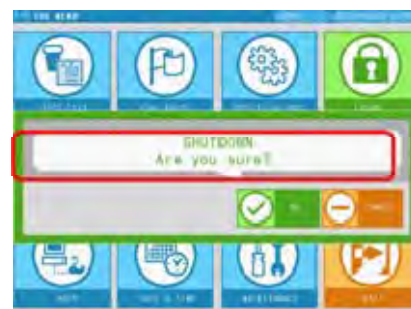


- (3) Press the  key to display the HOME screen.

- (4) Press the  button to display the SUB MENU screen.

- (5) Press the  button.

- (6) The message "SHUTDOWN Are you sure?" will appear.



Section 9 System Shutdown

Note

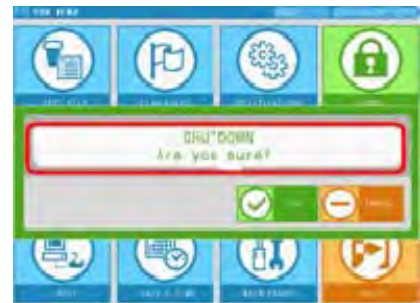
The SHUTDOWN screen CANNOT be displayed during an assay.

(7) Press the  button.

(Press the  button to close the message.)

(8) If you press OK, the following message will appear:
"If backup parameters to USB stick, set it and push OK."

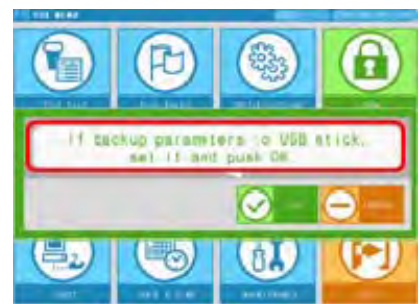
If you want to back up the data, connect a USB flash drive to the instrument.



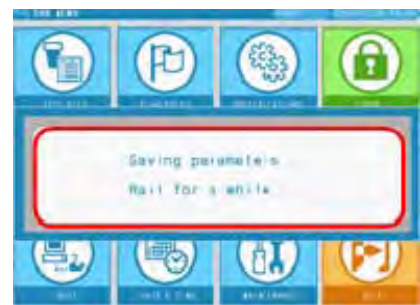
<SHUTDOWN screen>

(9) When you press the  button, the parameters will start to be saved.

(Pressing the  button cancels the save.)



(10) The following message will appear:
"Saving parameters ...Wait for a while."



(11) The following message will appear:
"Saving results ...Wait for a while."

(12) The following message will appear:
"LOG SAVE Please wait for a while."



Section 9 System Shutdown

- (13) When the data has been saved, the following message will appear:

“Set substrate replacement solution
Are you ready?”

- (14) Press the  button.

- (15) The following message will appear:

“Replacing substrate... Wait for a while...”

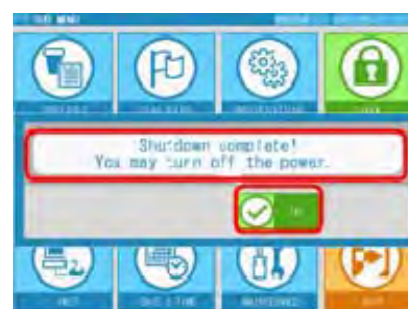
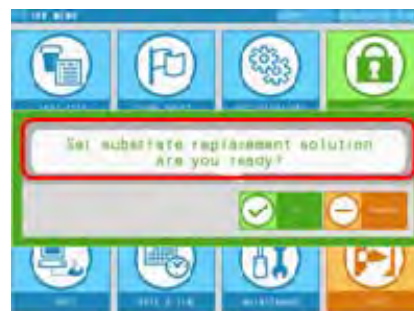
- (16) The liquid replacement will start, so wait until it is completed.

- (17) Upon completion of liquid replacement, the following message will appear:

“Shutdown complete!
You may turn off the power.”
The liquid replacement is completed.

- (18) Press the  button.

- (19) Switch OFF the AIA-900.



Note

The results of assays will be saved in the internal memory of the instrument even after you switch off the instrument.

Note, however, that up to 1024 assay results can be saved. If the number of results exceeds 1024, the results in the memory will be deleted automatically in chronological order.

Section 10 Other Functions

10.1. SUB MENU

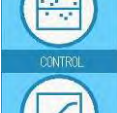
Press the  button on the Home screen to display the “SUB MENU” screen.



On the SUB MENU, you can set necessary operating conditions such as register panels of analytes, register controls, check calibration curves, and so on.



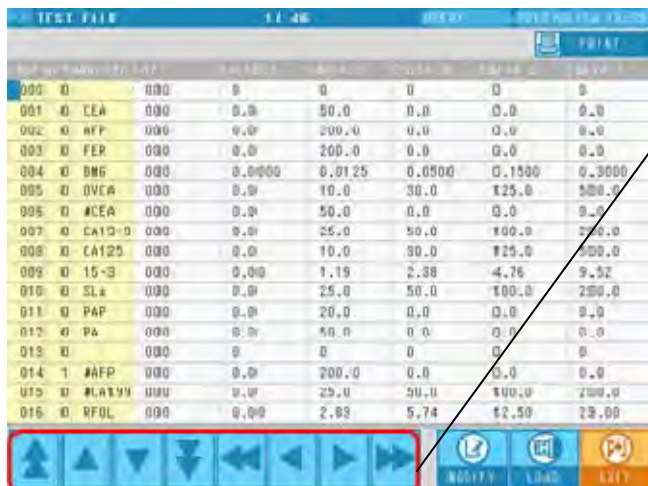
Section 10 Other Functions

	1. TEST FILE	: Setting the parameters for each analyte
	2. FLAG RULES	: Setting or changing assay result judgment conditions (flag file)
	3. SPECIFICATIONS	: Various settings related to operation
	4. LOGON	: Registering or changing the operator's name
	5. PANEL	: Registering or changing panels of analytes
	6. CONTROL	: Registering or changing controls
	7. CALIBRATION	: Checking, accepting or deleting a calibration curve
	8. SHUTDOWN	: Procedure of system shutdown
	9. HOST	: Setting the conditions for communicating with the host computer
	10. DATE & TIME	: Setting the date and time
	11. MAINTENANCE	: Checking the operation of each part of the instrument
	12. EXIT	: Returning to the home screen

Section 10 Other Functions

10.2. TEST FILE (assay parameters for each analyte)

The assay parameters for each analyte used on this instrument are stored in each Test file. The reference range for each analyte can be set as necessary.



Item No.	Analyte	Unit	REF.L	REF.H	REF.L	REF.H	REF.L	REF.H
000	0	000	0	0	0	0	0	0
001	0	CEA	000	0.0	50.0	0.0	0.0	0.0
002	0	AFP	000	0.0	200.0	0.0	0.0	0.0
003	0	FER	000	0.0	200.0	0.0	0.0	0.0
004	0	BH6	000	0.0000	0.0125	0.0500	0.1500	0.3000
005	0	OVER	000	0.0	10.0	30.0	125.0	500.0
006	0	ACEA	000	0.0	50.0	0.0	0.0	0.0
007	0	CA125	000	0.0	25.0	50.0	100.0	200.0
008	0	CA125	000	0.0	10.0	30.0	125.0	500.0
009	0	15-3	000	0.00	1.19	2.38	4.76	9.52
010	0	SL4	000	0.0	25.0	50.0	100.0	200.0
011	0	PAP	000	0.0	20.0	0.0	0.0	0.0
012	0	PA	000	0.0	50.0	0.0	0.0	0.0
013	0		000	0	0	0	0	0
014	1	AFP	000	0.0	200.0	0.0	0.0	0.0
015	0	PLATIN	000	0.0	25.0	50.0	100.0	200.0
016	0	RFL	000	0.00	2.03	5.74	12.50	25.00

A TEST FILE consists of many pages. You can see the contents of a file by scrolling through it with the arrow buttons.



- You cannot change the settings of the TEST FILE during assay.
- The changed contents are stored in the internal memory of the AIA-900. They will remain unchanged even after the AIA-900 is switched OFF.

Procedure

- (1) Press the  button on the "SUB MENU" screen to display the "TEST FILE" screen.
- (2) Using , select an item that you need to change on the "TEST FILE" screen.
- (3) Press the  button to display the entry screen.
- (4) Enter the new changed value.
- (5) Press the  button to return to the "TEST FILE" screen.



A change in assay parameters in a TEST FILE may affect the assay results. Please don't change parameters except for the normal range (REF.L, REF.H). Please consult with Tosoh local representatives before changing an assay parameter.

10.3. Loading a TEST File by pressing LOAD button

The TEST FILE for an analyte can be loaded from the USB flash drive supplied by Tosoh. Loading the TEST FILE can be executed by pressing  button on the "TEST FILE" screen.



A change in assay parameters in a TEST FILE may affect the assay results. Please consult with Tosoh local representatives before changing an assay parameter.

Section 10 Other Functions

10.4. TEST FILE (contents of a TEST FILE)

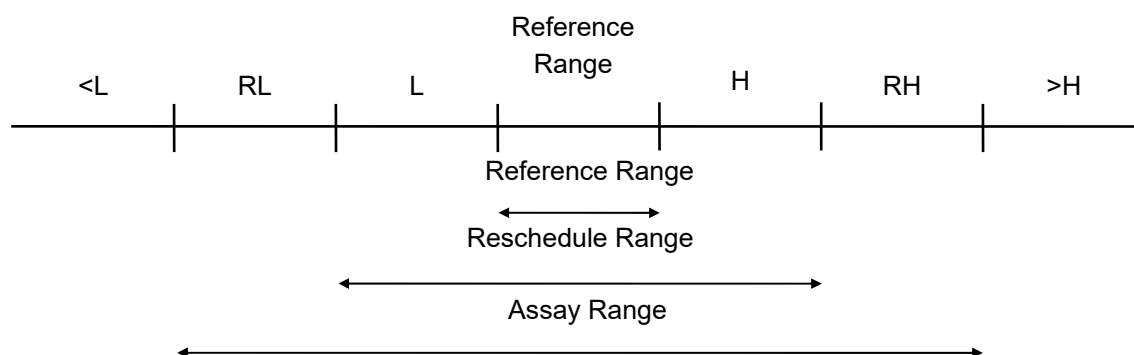
The displayed contents of a TEST File are as follows.

* Only Items that are marked O can be edited.

Name	Explanation	Editable by an operator	Editable by an administrator
CODE	Analyte code		
ACT	Use Yes/No (0 = No, 1 = Yes)		O
ANALYTE	Analyte name		O
LOT	Calibrator lot		O
CALIB.1	Calibrator 1 set concentration		O
CALIB.2	Calibrator 2 set concentration		O
CALIB.3	Calibrator 3 set concentration		O
CALIB.4	Calibrator 4 set concentration		O
CALIB.5	Calibrator 5 set concentration		O
CALIB.6	Calibrator 6 set concentration		O
CAL LOT L	Calibration curve finalized lot 1		
CAL LOT R	Calibration curve finalized lot 2		
UNIT	Unit of concentration		O
DECIMAL	Number of digits after the decimal point of the concentration value		O
ASSAY.L	The lower limit concentration on the calibration curve		O
ASSAY.H	The upper limit concentration on the calibration curve		O
REF.L	The lower limit concentration of reference range		O
REF.H	The upper limit concentration of reference range After taking dilution ratio into account Regarding control, refer to control upper limit.		O
RESCHED.L	The lower limit of concentration for re-assaying After taking dilution ratio into account This is not applied for controls.		O
RESCHED.H	The upper limit of concentration for re-assaying After taking dilution ratio into account This is not applied for controls.		O
FACTOR_A	Concentration correction factor A		O
FACTOR_B	Concentration correction factor B		O
SMPL.VOL	Sample dispensing volume		
DIL.VOL	Diluent dispensing volume		
2 REAG.	2-step reagent dispensing volume		
CAL.CODE	Calibrator code (for checking during barcode CAL)		
CAL.NO	Level of calibrator		
CAL.MUL	Number in replicate for calibrators		
CAL.EQU	Calibration curve regression formula		
CAL.CV	Number of days during which the calibration curve is valid		
DIL.SP.1	Dilution ratio of sample 1		O
DIL.SP.2	Dilution ratio of sample 2		O

Section 10 Other Functions

Name	Explanation	Editable by an operator	Editable by an administrator
DIL.CAL	Dilution ratio of calibrator		
DIL.CNTL	Dilution ratio of control		O
DIL.DO	Automatic dilution ratio applied when DO		O
DIL .AH	Automatic dilution ratio applied when >H		O
DIL .CALC	Concentration is calculated with dilution ratio Yes/No		O
DIL .CODE	Diluting solution code	O	O
DIL.NAME	Name of diluting solution	O	O
DIL.PRTY	Method of determining dilution ratio 1: Cup = SP.1, Tube = SP.2 2: Cup = SP.2, Tube = SP.1 3: SP.1 fixed 4: SP.2 fixed	O	O
PRE.SPVOL	Volume of sample to be pre-treated		
PRE.1VOL	Volume of pretreatment reagent 1		
PRE.2VOL	Volume of pretreatment reagent 2		
PRE .CODE	Pre-treated solution code		O
PRE.NAME	Pre-treated solution name		O
PROTOCOL	Assay protocol 1: 10-minute assay 2: 40-minute assay 3: 2-step 20-minute assay 4: 2-step 40-minute assay		



If you have administrative rights, you can change many assay parameters. Please take care to not enter the wrong parameters. Please consult with Tosoh local representatives before changing an assay parameter.

10.5. FLAG RULES

The conditions for judging assay results can be set or changed. When an assay result is obtained, the status and handling of the assay result can be determined based on the predetermined judgment criteria.

STATUS

REJECT	Re-calculation cannot be performed for a result with this flag. The result is output as REJECT status at the time of printing and communicating with a host computer.
PENDING	Re-calculation can be performed for a result with this flag. The result is output as PENDING status at the time of printing and communicating with a host computer.
FINAL	Re-calculation cannot be performed for a result with this flag. The result is output as FINAL status at the time of printing and communicating with a host computer.

ACTION

The following handling of flags applies only to patient specimens and not to calibration or control assay.

RESCHED	Makes another assay request on the Order screen. If the other requests for the same sample ID already exist, that request will be added as a new request.
RES.DIL	Makes another assay request with a dilution factor on the Order screen. The dilution factor is given according to the following rules: If the dilution factor to be applied exceeds 1000, the dilution factor of 1000 will be applied. For flag >H: The dilution factor is given by multiplying the dilution factor used in the previous test by DIL AH in the TEST FILE. For flag DO: The dilution factor is given by multiplying the dilution factor used in the previous test by DIL DO in the TEST FILE. Other cases: The dilution factor is given by multiplying the dilution factor used in the previous test by the dilution factor specified for each type of samples (DIL SP 1 and DIL SP 2) in the TEST FILE.

Section 10 Other Functions

RETEST

A retesting is performed automatically for a specimen if a flag which prompts RETEST or RETEST.DIL is given to the previous assay result. In the following cases, a retesting cannot be performed but it is treated as a reschedule.

- When a sorter is not used
- When ORDER (NON-BARCODE) is used
- When the rack ID could not be read
- When specimen barcode could not be read
- When a retesting takes place once again
- When the instrument stops during a retesting
- In the case flag NS is applied

RETEST.DIL

A retesting is performed automatically with a specified dilution factor. The rule to assign the dilution factor is as follows. (If a dilution factor exceeds 1000, it is treated as 1000.)

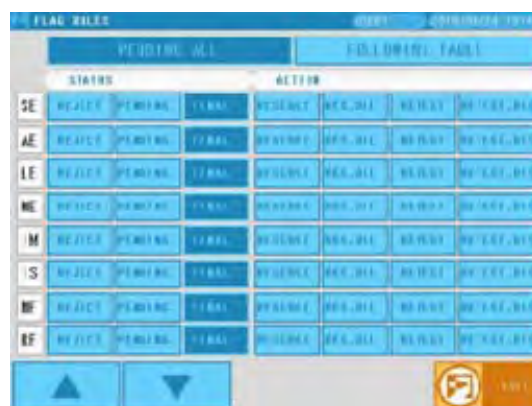
For flag >H: The dilution factor that is obtained by multiplying the dilution factor used in the previous test by DIL AH in the TEST FILE.

For flag DO: The dilution factor that is obtained by multiplying the dilution factor used in the previous test by DIL DO in the TEST FILE.

Other flags: The dilution factor that is obtained by multiplying the dilution factor used in the previous test by the dilution factor specified for each type of samples in the TEST FILE.

Procedure

- (1) Press the  button on the "SUB MENU" screen to display the "FLAG RULES" screen.
- (2) You can set or change the conditions for judging assay results.



FLAG RULES		FOLLOWING TABLE	
STATUS	ACTION	STATUS	ACTION
SE	REJECT	PENDING	FINAL
AE	REJECT	PENDING	FINAL
LE	REJECT	PENDING	FINAL
ME	REJECT	PENDING	FINAL
M	REJECT	PENDING	FINAL
S	REJECT	PENDING	FINAL
BE	REJECT	PENDING	FINAL
BF	REJECT	PENDING	FINAL

PENDING ALL

The status of all assay results will be set to PENDING, regardless of the status for each flag set on the FLAG RULES screen.

FOLLOWING TABLE

The status for each flag set on the FLAG RULES screen is valid. For details of each flag, refer to "Section 12 Flags and Error Messages."

10.6. Automatic re-assay

If a RETEST or RETEST.DIL flag was given to an assay result, the instrument will automatically perform a retesting of the sample. After all of the ordered samples have been sampled, the sample racks are circulated for checking the samples to be re-assayed. The necessary conditions for performing retesting are that the samples to be re-assayed have the same barcode attached and are in the same positions in the rack with the same ID as those in the previous test.



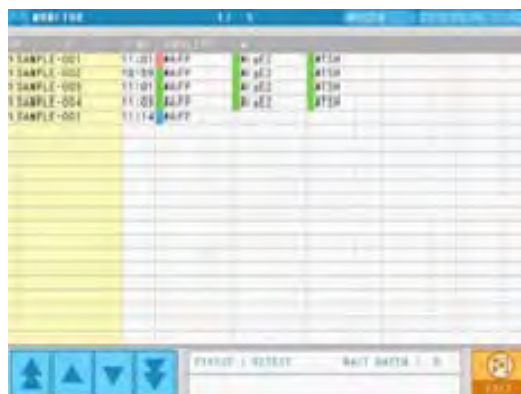
Automatic re-assay will work only in Barcode Assay with a sorter. The following conditions have to be fulfilled for automatic re-assay.

- The rack with ID must be used.
- The specimen barcode can be read.
- The specimen that has already been re-assayed cannot be re-assayed again.
- Sample racks cannot be added or removed during re-assays.
- Only specimens or controls can be re-assayed.

The following are restricted during automatic re-assays.

- Additional assays cannot be performed.
- Priority assay of an emergency specimen cannot be performed.

During an automatic re-assay operation, the status on the MONITOR screen will change to “re-assay in progress,” and the assay results will be marked in red.



Section 10 Other Functions

When the automatic re-assay is completed, a message indicating the end of the automatic re-assay will appear. Remove all of the sample racks, and press the  button. Additional assays can now be performed.



To interrupt the automatic re-assay before being completed, press the  button on the HOME screen, and then press the  button on the STOP/PAUSE ASSAY screen. The orders for re-assay which have not been sampled are resumed onto the ORDER screen. Additional assays can now be performed.



10.7. SPECIFICATIONS

You can set the conditions for the operation of the instrument.

Procedure



- Press the  button on the “SUB MENU” screen to display the “SPECIFICATIONS” screen.



CUP SORTER

USE/NOT USE

Select whether or not to use the optional sorter connected to the instrument. If you press the <USE> button, the sorter will operate, and AUTO mode will be disabled. When the <NOT USE> button is selected while a sorter is connected, the instrument can be operated as if no sorter is connected.

If you press the  button while an optional sorter is not connected, the message “Cup sorter is unused” will be displayed, and you will be unable to make a selection.

REAGENT SHORT

SKIP/PAUSE

Select whether or not to SKIP the assay or PAUSE sampling when there is a shortage of test cups or reagent vials.

REALTIME PRINTOUT

YES/NO

Select whether or not to print in real time the assay results to the printer.

REALTIME REPORT

PATIENT/CONTROL

If the PATIENT is selected, the assay results for sample SP.1 and SP.2 will be printed. If the CONTROL is selected, the assay results for sample QC will be printed. Regardless of which is selected, the assay results for calibrators will always be printed.

Section 10 Other Functions

REAGENT RACK

L4S4/L3S8/ L2S12

Select the arrangements for reagent vials in the reagent rack.

FT3 CHECK

YES/NO

Select whether or not to perform elevated value checks for FT3 and #FT3.

When FT3 (#FT3) is assayed, a comparison with the concentrations of other hormones including FT4 (#FT4), #TSH, TSH3G, and T4 (#T4) takes place, providing an estimate of whether or not the obtained assay result of FT3 (#FT3) is elevated.

If FT3 (#FT3) is too high (out of the reference range), and if the simultaneously assayed FT4 (#FT4) or T4 (#T4) was not high or if #TSH or TSH3G is not low; the assay result will be treated as follows.

- High value: The concentration is higher than the value of REF.H (the upper limit concentration of the reference range) of the analyte concerned (including the >H or the DO flag in the case of the sandwich assays).
- Low value: The concentration is lower than the value of REF.L (the lower limit concentration of the reference range) of the analyte concerned (including the <L or the DO flag in the case of the competitive assays).

Note that the flag CV assumes that the assay result has been obtained.

[In the case of #FT3]

When the #FT3 assay result is obtained, a judgment is made according to an arbitrary combination of assay results from among #FT4, #TSH and #T4 which were assayed in advance. If the above conditions apply, and the assay result was evaluated as an elevated value, the flag DH will be attached once again. If none of the results of these analytes which were assayed in order to make the judgment was obtained, the flag UH will be attached.



Pay attention to the sequence of registrations of the assay requests to ensure that assay results of the analytes used to make the judgment can be obtained before an assay result of #FT3 (FT3) is obtained.

Those assay results should be obtained from the same specimen simultaneously. Also, when recalculating the assay result of #FT3 (FT3), a re-judgment will be made only if all the concerned assay results, including the assay result of #FT3 (FT3), are recalculated.

10 min PRIORITY

This setting is used to increase the measurement efficiency of the 10-minute analytes. A setting from 0 to 9 is acceptable. If the setting is other than 0, after consecutive sampling for 40-minute analytes without dilution is performed as many times as specified by the setting, sampling will pause once to shorten a waiting time for 10-minute analytes.

Section 10 Other Functions

BARCODE READER

Set the read mode of the barcode reader provided on the sample loader. Press the

OPTIONS

button to display the Setting screen.

Select the item you want to modify with the arrow buttons, and press the  button. Then, YES/NO will alternate or a numeric keypad will be displayed, which

depends on the item. When the modification is completed, press the  button to reflect the modified settings to the barcode reader.

Press the EXIT button to return to the SPECIFICATIONS menu.



The set contents are shown below.

Item	Selection	Function
MODE SET	YES/NO	Setting/non-setting by parameters
CODE39	YES/NO	Sets use of CODE39
ITF	YES/NO	Sets use of ITF
NW7	YES/NO	Sets use of NW7
CODE128	YES/NO	Sets use of CODE128
JAN/EAN/UPC	YES/NO	Sets use of JAN, EAN, UPC
INDUST-20F5	YES/NO	Sets use of INDUST-20F5
COOP-20F5	YES/NO	Sets use of COOP-20F5
CODE39 START&STOP OUT	YES/NO	Sets transmission of start/stop character output CODE39
CODE39 CHK-DIGIT	YES/NO	Sets inspection for check digits CODE39
CODE39 CHK-DIGIT OUT	YES/NO	Sets transmission of check digits wide CODE39
CODE39 MIN DIGIT	3 – 20	Sets the minimum number of check digits CODE39
CODE39 MAX DIGIT	3 – 20	Sets the maximum number of check digits CODE39
ITF CHK-DIGIT	YES/NO	Sets inspection for check digits ITF
ITF CHK-DIGIT OUT	YES/NO	Sets transmission of check digits wide ITF
ITF MIN DIGIT	2 – 20	Sets the minimum number of check digits ITF

Section 10 Other Functions

Item	Selection	Function
ITF MAX DIGIT	2 – 20	Sets the maximum number of check digits ITF
NW7 START&STOP OUT	YES/NO	Sets transmission of start/stop digits NW7
NW7 SMALL/LARGE CHAR	SMALL/ LARGE	Sets the type of start/stop character NW7
NW7 CHK-DIGIT	YES/NO	Sets inspection for check digit NW7
NW7 CHK-DIGIT TYPE	MOD16 MOD11 MOD10 2W MOD10 3W 7 CHECK DR MOD11-A MOD10 2W-A	Sets the check digit type for inspection with NW7
NW7 CHK-DIGIT OUT	YES/NO	Sets transmission of check digits NW7
NW7 MIN DIGIT	3 – 20	Sets the minimum number of check digits NW7
NW7 MAX DIGIT	3 – 20	Sets the maximum number of check digits NW7
CODE128 DOUBLE CHAR	YES/NO	Sets check of double character start pattern CODE128
CODE128 MIN DIGIT	1 – 20	Sets the minimum number of check digits CODE128
CODE128 MX DIGIT	1 – 20	Sets the maximum number of check digits CODE128
JAN/EAN/UPC UPC-E	YES/NO	Sets use of UPC-E with JAN/EAN/UPC
JAN/EAN/UPC JAN8	YES/NO	Sets use of JAN8
JAN/EAN/UPC JAN13	YES/NO	Sets use of JAN13
JAN/EAN/UPC UPC DIGIT	13/12	Sets the transmission number of digits for UPC-A
JAN/EAN/UPC UPC 0 ADD	YES/NO	Sets addition of UPC-E system code 0



If you have completed a modification without pressing the  button, the modified value will become valid only after the instrument has been restarted.

ALARM VOLUME

Select the alarm buzzer volume setting. The volume can be set within the range from 0 (mute) to 255 (maximum).

10.8. LOGON

You can register or change the operator's name.

Procedure

- (1) Press the  button on the "SUB MENU" screen to display the "LOGON" screen.
- (2) Press the  button. You can register a new operator, select an operator, or change or delete a registered operator from the OPERATOR Screen. For details, refer to **"6.3. Checking and Selecting the Operator"**.
- (3) The operator's name will be printed on print-outs of measurement reports and so on.



10.9. PANELS

By registering a set of analytes that are used on a daily basis as a panel, you can make an assay request for multiple analytes with a single operation. You can register up to 24 analytes for one panel, and register up to 50 panels.

Procedure

- (1) Preparation before registering a panel.

Press  button on the HOME screen to open the SUB MENU screen.

Press  button on the SUB MENU screen to open the PANEL screen.

- (2) Registering analytes.

Move the cursor, in column numbered 1 on the PANEL setting screen, with the



buttons to a cell to

which you want to register an analyte.

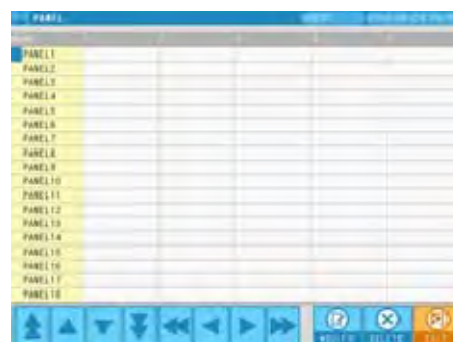
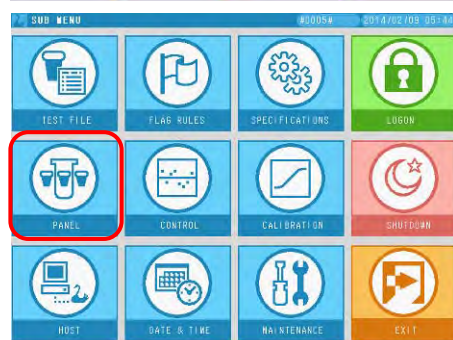
Press the  button to open the analyte registering screen and select an analyte. If you cannot find an analyte you want to register on the

screen, press the  buttons to change the page.

Press the OK button to return to the analyte registering screen and the cursor will move to the

next cell. Press the  button again and repeat the above procedures to enter some analytes you want to register to the panel.

You can change the dilution factor registered for a panel when creating a request.



Section 10 Other Functions

(3) Changing a panel name.

To change a panel name, move the cursor to the

NAME cell, and then press the  button to display the Panel name input screen.

After entering the panel name, press the



button and return to the Panel setting screen.

If you press the  button, the display will

return to the Panel setting screen without changing the panel name.



(4) Deleting

To delete all the analytes that has already been set, move the cursor to the cell of the panel

name and press the  button.

To delete any analyte, move the cursor to the

cell of that analyte and press the  button.



You can register up to 24 analyte for each panel. Note, however, that in the non-sorter mode, only the first five analytes are applicable, so be careful when making a registration.

Section 10 Other Functions

10.10. CONTROL

This function is used to register control samples (QC materials) which are used on a daily basis. The registered control samples can be called from the Order screen, and, as in the case of a panel, an order can be created.

The AIA-900 does not have a function to create QC charts with assayed results for control samples.

- (1) To register a panel for control samples, first,
 select the button on the Home screen to open the Sub-menu screen.



- (2) Press the  button on the Sub-menu screen to open the Control screen.



- (3) By pressing the  button on the Control screen, you can enter the Control name, analyte, average value, lower control limit and upper control limit.

To delete a registered Control or an item of it,

move the cursor to the Control name or the

specific cell using the 

buttons, and press the  button.

NAME	DC1	MEAN1	MIN1	MAX1	DC2	MEAN2	MIN2	MAX2
DC1	#TSH	0.000	0.000	0.000	FOL	0.0	0.0	0.0
DC2	#TSH	0.000	0.000	0.000				
DC3	#TSH	0.000	0.000	0.000				
DC4								
DC5								
DC6								
DC7								
DC8								
DC9								
DC10								
DC11								
DC12								
DC13								
DC14								
DC15								
DC16								
DC17								
DC18								

Section 10 Other Functions

- (4) To change the Control name, move the cursor to the NAME cell, and press the  button to open the Control name input screen.

Enter a new control name, and press the

 button. Alternatively, read the barcode attached on the control by a handheld barcode reader (optional). Then, the first 10 digits will be set as the Control name.




In case you use control samples supplied by Tosoh, the control name is registered as the first 10 digits from the 16 digits of the barcode. If the first 10 digits of the read barcode are identical to those of the registered Control, the sample is recognized as the Control.

- (5) Register analytes for the Control.
If the analyte you want to input is not displayed,

press the   buttons to switch the display for the analyte. The DILUTION field appears blank if no analyte for the Control is registered, whereas a value of an analyte appears if the analyte is already registered.

Next, press  to return to the Control screen, to enter average, lower control limit and upper control limit.



Note

The average value can be set in the field automatically by just entering the lower control limit in MIN and the upper control limit in MAX but leaving the average value field blank.



For the registered QC materials, a flag judgment is done with the lower control limit and upper control limit that were entered at the registration of the QC materials.

10.11. CALIBRATION

The AIA-900 can store up to 2 valid calibration curves for each analyte.
Regarding the operation method, refer to “**Section 7 Calibration.**”

10.12. SHUTDOWN

In the daily shutdown operation, the substrate is replaced with placing 70% ethanol or 70% isopropyl alcohol solution.

To ensure good and stable performances, remove the remaining reagents from the instrument and store them in a refrigerator if they are required in the future.

Regarding the operation method, refer to “**Section 9 System Shutdown.**”

10.13. HOST

The AIA-900 can download requests, query requests, and transmit assay results from/to the host computer.

Set the conditions for communications with the host computer as presented on the screen below.

- Press the  button on the SUB MENU screen to display the HOST screen.



HOST		USER1	2010/06/24 11:01
ASTM	STANDARD	AIA-600II	
QUERY	YES NO	AUTO	MANUAL
DEFAULT DOWNLOAD	BARCODE	NON-BARCODE	
REALTIME UPLOAD	FINAL	ALL	PATIENT CONTROL
UPLOAD OPTION	RATE	LOT	INSTRUMENT FLAG HIGHEST ALL
NO RESULT	ZERO	NULL	
>H <L RESULT	ZERO	NULL	ASSAY RANGE ASSAY RANGE < >
BAUD RATE	1200	2400	4800 9600
DATA LENGTH	7	8	
STOP	1	2	
PARITY	NONE	EVEN	ODD

- Key functions**

1. ASTM

Protocol for communicating with the host computer

You can select the following:

STANDARD: Standard mode

AIA-600II : AIA-600II compatible mode

Section 10 Other Functions

2. QUERY

Query setting

YES: An order query is sent automatically to the host computer.
NO: An order query is not sent automatically to the host computer.
However, a query can be sent manually.

- **Options when "YES" has been selected.**

AUTO: Set to AUTO when using Host query mode (a sorter is used).
MANUAL: A query is sent when you input an ID in an order registration.

- **Communication timeout settings**

TIMEOUT: The time out period value is set in seconds. If the communication with the host computer is interrupted during that time, the instrument will stop the communication.

The QUERY settings for each Accessory Function are indicated in the following table. For details, see “8.2.4 Accessory Function at Order Creation.” When you use HOST QUERY Mode, please select QUERY setting YES, and set Option at the time to “YES” AUTO.

	Function Query	Function Download	Query at Specimen ID Input	HOST QUERY
QUERY setting	NO	NO	YES-MANUAL	YES-AUTO

3. DEFAULT DOWNLOAD

When an order is transmitted from the host computer, you can designate the BARCODE or NON-BARCODE order screen to store the order.

BARCODE: Register the order in the BARCODE order screen.
NON-BARCODE: Register the order in the NON-BARCODE order screen.

4. REALTIME UPLOAD

- **Option for uploading**

FINAL: When assay results are obtained, only the assay results with the FINAL flag will be sent.
ALL: When assay results are obtained, all the results are sent.

- **Sample whose data is to be uploaded**

PATIENT: Only when the type of sample is SP.1 or SP.2, the assay result is sent.
CONTROL: Only when the type of sample is QC, the assay result is sent. Calibration data will never be sent unconditionally.

5. UPLOAD OPTION

- Assay result upload option

RATE: Rate values are attached to results when sending them.

LOT: Lot numbers are attached to results when sending them.

INSTRUMENT FLAG: Flags are attached to results when sending them.

- Flag option

HIGHEST: Instrument flags are attached to results when sending them.

ALL: Instrument flags, calculation flags and judgment flags are attached to results when sending them.

6. NO RESULT

- Option for when a concentration value was not obtained.

ZERO: 0 is sent as the concentration value.

NULL: NULL is sent as the concentration value.

7. >H <L RESULT

- Option for when an assay result was outside the assay range

ZERO: 0 is sent as the concentration value.

NULL: NULL is sent as the concentration value.

ASSAY RANGE: The value of ASSAY L/H in the TEST FILE is sent as the concentration value.

ASSAY RANGE < >:

If the result is <L, the symbol "<" is attached to the front of the concentration value registered as ASSAY L in the TEST FILE and it will be output as the concentration value. If the result is >H, the symbol ">" is attached to the front the concentration value registered as ASSAY H in the TEST FILE and it will be output.

Note

In the case of ASSAY RANGE and ASSAY RANGE < >, the assay range multiplied by the dilution factor can be output according to the specification by DIL.CALC. The default setting is "not multiplied by the dilution factor". To change the setting, please contact Tosoh local representatives.

8. BAUD RATE

Sets the transmission speed (baud rate) for sending data.

1200: The baud rate is set to 1200 bps.

2400: The baud rate is set to 2400 bps.

4800: The baud rate is set to 4800 bps.

9600: The baud rate is set to 9600 bps.

9. DATA LENGTH

Sets the data length to be sent.

7: The data length is 7 bits.

8: The data length is 8 bits.

Section 10 Other Functions

10. STOP

Sets the number of stop bits.

1: The number of stop bits is 1.

2: The number of stop bits is 2.

11. PARITY

Parity

NONE: No parity check

EVEN: Even parity check.

ODD: Odd parity check.

12. EXIT

The display returns to the SUB MENU.

Section 10 Other Functions

10.14. DATE & TIME

You can set or change the date and time according to the following procedures.

- (1) Press the  button on the SUBMENU screen to display the DATE & TIME screen.



- (2) Press the  button.
The DATE & TIME input screen will appear.



- (3) Enter the current date and time, then press the  button to return to the DATE & TIME screen.



- (4) Press the  button to return to the SUBMENU screen.



Section 10 Other Functions

10.15. MAINTENANCE

You can check the operation of the instrument and also back up the parameters.

Press the  button on the SUB MENU screen to display the Maintenance screen.



The operation in “MAINTENANCE” can’t be executed during an assay. You must operate them when the status on the MONITOR screen is “STOP”.

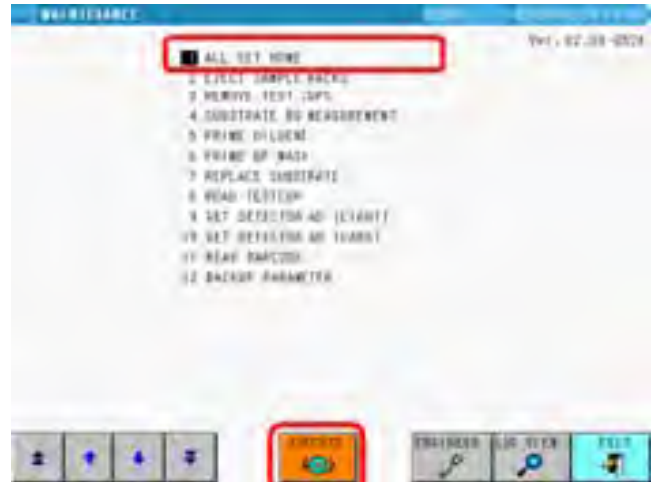
Section 10 Other Functions

1: ALL SET HOME

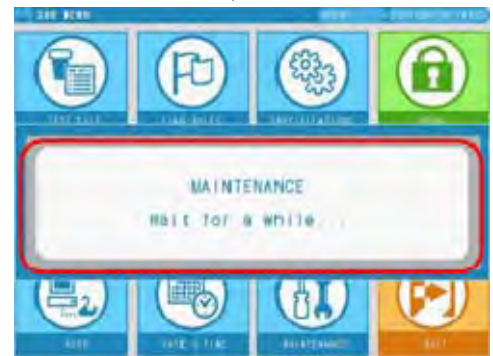
By performing initial mechanical checking of the instrument, it is possible to check for abnormalities in the mechanism.

- 1) Move the cursor to **1. ALL SET HOME** on the Maintenance screen, and then

press the  button.



- 2) A message will appear on the screen during the operation check. If the operation check is completed, the message will disappear.



2: EJECT SAMPLE RACKS

This is a function to take out sample racks that are stuck on the sample loader due to a breakdown, for example.

- (1) Move the cursor to **2: EJECT SAMPLE RACKS** on the MAINTENANCE screen, and

then press the  button. Sample racks on the sample loader will be automatically conveyed.

- (2) A standby message will appear on the screen during the operation check. After a while the message will disappear, indicating that the operation check is complete.

3: REMOVE TEST CUPS

This is a function to dispose of test cups that remain inside the instrument due to a breakdown, for example.

- (1) Move the cursor to **3: REMOVE TEST CUPS** on the MAINTENANCE screen, and then press the  button. Test cups that remain inside the instrument will be disposed.
- (2) A standby message will appear on the screen during the operation check. After a while the message will disappear, indicating that the operation check is complete.

4: SUBSTRATE BG MEASUREMENT

This function independently works for background measurement checking of the substrate. This function may be applied after substrate line washing (refer to “**Section 11 Maintenance**”) in order to check whether or not the line washing was performed properly.



Execute this function after replacing the substrate solution remaining in the substrate line with freshly prepared substrate solution. Once the background measurement has completed normally, subsequent measurements will be performed and reported under such conditions.

- (1) Set one STD cup in position No.2 on the sample rack, and place the rack on the loader. (When using a sorter, set an STD cup in the sorter.)
- (2) Move the cursor to 4: SUBSTRATE BG MEASUREMENT.
- (3) Press the  button. The substrate background assay will start.
- (4) Upon completion of the assay, the Measurement result screen will appear. When pushing the  button, the results will be printed out.

An example of printed substrate background assay results

SUBSTRATE BG MEASUREMENT		USER1	2010/02/26 08:36	
	SMP	REF		
BACKGROUND	: 157	177		
SUBSTRATE	: 1047	16600		
SUBSTRATE REPLACEMENT	: 1.0	OK	→	1
4MU BACKGROUND	: 252	OK	→	2
LAMP INTENSITY LEVEL	: 0.8	OK	→	3

1. Indicates whether or not a substrate replacement using the newly prepared substrate has been performed adequately.
 If performed adequately: OK
 If not performed adequately: NG
 Check the remaining volume of the substrate and perform the “SUBSTRATE BG MEASUREMENT” again.

Section 10 Other Functions

2. Measures the fluorescence intensity of the substrate (background intensity), and indicates whether or not there is any problem.
 Less than 1500 nM (no problem): OK
 1500 nM or higher (high background): HB
 Replace with a substrate bottle with a freshly prepared bottle and perform the "SUBSTRATE BG MEASUREMENT" again.
3. Indicates the light intensity of the detector lamp.
 0.5 or more (intensity is adequate): OK
 Less than 0.5 (intensity is inadequate): LL
 ->Contact the nearest Tosoh local representative.

5: PRIME DILUENT

- (1) Replace the Diluent tank.
- (2) Move the cursor to **5: PRIME DILUENT**, and press the  button.
- (3) Enter the number of the execution repetitions of priming on the numeric keypad, and press the  button.
- (4) The diluent solution in the tube will be replaced with a new diluent solution.
- (5) The replacement action is repeated as many times as entered on the keypad.
 A standby message will appear on the screen during the operation check. After a while the message will disappear, indicating that the operation check is complete.



6: PRIME BF WASHER

- (1) Replace the Washer tank.
- (2) Move the cursor to **6: PRIME BF WASHER**, and press the  button.
- (3) Enter the number of the execution repetitions of priming on the numeric keypad, and press the  button.
- (4) The washer solution in the tube will be replaced with a new washer solution.
- (5) The replacement action is repeated as many times as entered on the keypad.
 A standby message will appear on the screen during the operation check. After a while the message will disappear, indicating that the operation check is complete.



7: REPLACE SUBSTRATE

- (1) Replace the Substrate bottle with a new Substrate bottle.
- (2) Move the cursor to **7: REPLACE SUBSTRATE**, and press the  button.
- (3) Enter the number of the replacements the on the numeric keypad, and press the  button.

The substrate solution in the tube will be replaced with a new substrate solution.

The replacement action is repeated as many times as entered on the keypad.

- (4) A standby message will appear on the screen during the operation check. After a while the message will disappear, indicating that the operation check is complete.



After the substrate has been replaced, measure the substrate background according to 4.SUBSTRATE BG MEASUREMENT, and confirm that there is no problem.

8: READ TESTCUP

Read the analyte code and lot number of a test cup by putting it under the camera. This function is for service engineers.

Move the cursor to **8: READ TESTCUP**, and press the  button.

The analyte code and lot number of the test cup under the cup reader will be read and displayed.

9: GET DETECTOR AD (LIGHT)

Test the light source (LED) of the fluorescence detector to see if it is normal. This function is for service engineers.

- (1) Move the cursor to **9: GET DETECTOR AD (LIGHT)**, and press the  button.
- (2) The detector data when the lamp is turned on will appear on the screen.

10: GET DETECTOR AD (DARK)

Test the fluorescence detector to see if it is normal. This function is for service engineers.

- (1) Move the cursor to **10: GET DETECTOR AD (DARK)**, and press the  button.
- (2) The detector data when the lamp is turned off will appear on the screen.

Section 10 Other Functions

11: READ BARCODE

This function is intended for checking the barcode reading for a tube set in the sample loader. This is for service engineers.

- (1) Move the cursor to **11. READ BARCODE**, and press the  button.
- (2) The barcode at the barcode read position of the sample loader will be read and displayed on the screen.

12: BACKUP PARAMETER

This function is to make a copy of the instrument parameters to a USB flash drive.

- (1) Insert the USB flash drive into the USB port.
- (2) Move the cursor to **12: BACKUP PARAMETER**, and press the  button.
- (3) A standby message will appear on the screen during the operation check. After a while the message will disappear, indicating that the operation check is complete.

Section 11 Maintenance

This section describes periodic maintenance which must be carried out by the user in order to keep the AIA-900 in good condition.

11.1. Daily maintenance

- **At the beginning of your work**
Carry out a daily check according to “**6.4 Daily check (without a sorter)**” or “**6.5 Daily check (with a sorter)**”.
- **At the end of your work**
Carry out a shutdown according to “**Section 9 System Shutdown.**”



Before shutting down the AIA-900, it is necessary to flush out the substrate tube with 70% ethanol or 70% isopropyl alcohol solution. If you leave substrate inside the AIA-900, part of the substrate solution may evaporate, and it may precipitate in the flow path.

Seal the substrate bottle with a clean silicone cap, or the like, and store it in a refrigerator.

11.2. Weekly maintenance

- **Washing the Substrate tube**

If the substrate tube is contaminated after long-term use, the Substrate background intensity may rise, so wash the inside of the Substrate tube at the end of assays once a week in accordance with the following procedure.



- (1) Replace the Substrate bottle with a bottle containing 70% ethanol or 70% isopropyl alcohol solution.

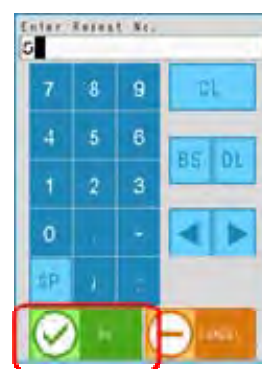
- (2) Select **"7: REPLACE SUBSTRATE"** and press the



button. Enter "5" on the numeric keypad, and press the



button. The substrate replacement operation will be repeated 5 times.



- **Cleaning the wash probe**

If the probe tip at the end of the B/F wash probe becomes contaminated, the assay accuracy/precision at low concentrations will be affected. Clean the probe tip after the end of assay once a week in accordance with, using the following method.

- (1) Confirm that the AIA-900 is not running, and then press the

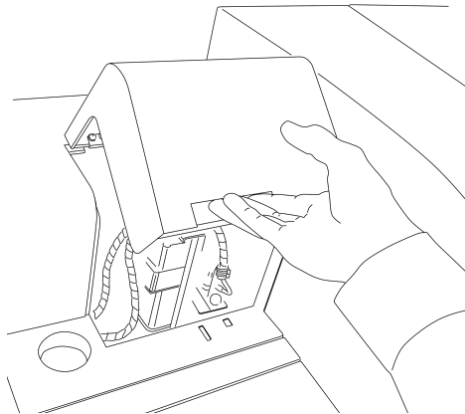


key on the side of the display. The lock on the wash unit cover will be unlocked.



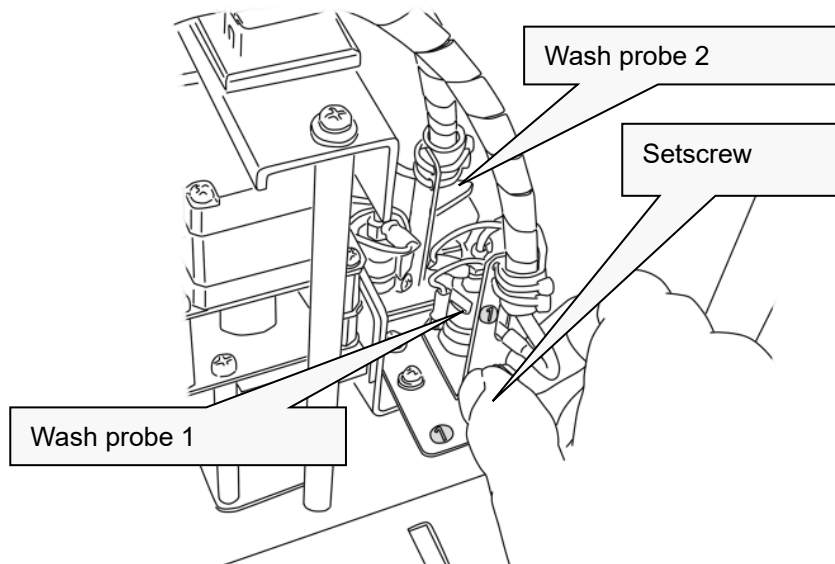
When you press the  key, the lock on the wash unit cover will be unlocked.

- (2) Open the cover by hand.



The end of the wash probe is always in contact with specimens, so be sure to wear gloves when washing the probe tip in order to prevent the risk of infection.

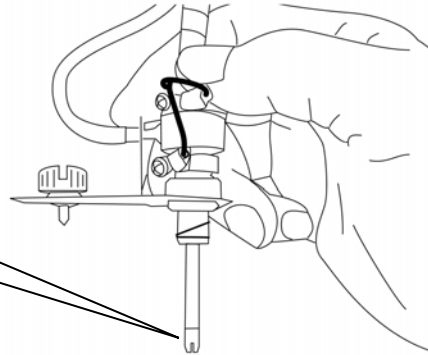
- (3) Loosen the setscrew and remove the wash probe 1 upward. Then, loosen the setscrew and remove the wash probe 2 in the back.



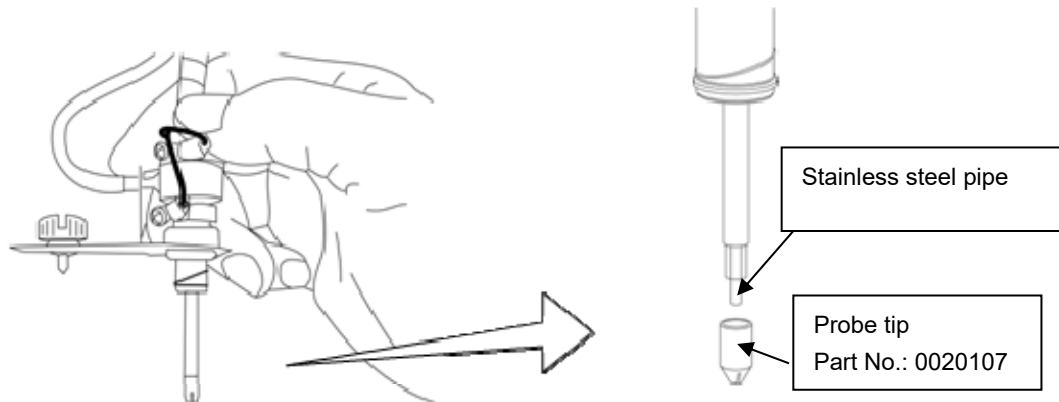
Section 11 Maintenance

- (4) Clean the probe tip with a cotton bud.

Thoroughly wipe the probe tip at the end of the B/F wash probe with a cotton bud moistened with 70% ethanol or 70% isopropyl alcohol.



- (5) If the probe tip is very dirty, pull it out, perform ultrasonic cleaning for 5 minutes with a neutral detergent, and finally wash it thoroughly with CAP Class I or CLSI Type 1 Reagent Grade water.
If the probe remains dirty despite washing it, replace it with a new one.



- (6) Align the probe tip with the center of the stainless steel pipe, and insert the steel pipe into the probe tip. If the probe tip is fitted with the pipe correctly, the end of the stainless steel pipe will protrude slightly from the end of the tip.



Not OK



OK



Fit the probe tip with the stainless steel pipe until the end of the pipe protrudes slightly.

- (7) Return the B/F wash probe to its original position, and fix it securely with the set screw.
- (8) Close the wash unit cover.
- (9) Carry out a Daily Check in accordance with “**6.4 Daily check (without a sorter)**” or “**6.5 Daily check (with a sorter)**”. Then, confirm that it has been completed normally.



- **Fit the probe tip with the stainless steel pipe securely. If the stainless steel pipe does not protrude, a malfunction may occur.**
- **When returning the B/F wash probes 1 and 2 to their original positions, do not reverse the positions of the probes. If you fix the probes in reverse, you will be unable to obtain correct results.**
Refer to the label that is attached to each probe.

11.3. Monthly maintenance

- **Updating the calibration curve**

The validity of a calibration curve expires 90 days after it was established.

When the validity period expires, a CV flag appears alongside the assay results. In this case, re-create a calibration curve.



If 60 or more days have passed after a CV flag appears, the flag will change to an NC flag, and the concentration value will no longer be obtained.

For the validity period of the calibration curve, refer to the Instructions For Use for each analyte.

- **Replacing the wash probe (probe tip)**

Replace the probe tip on the end of the B/F wash probe referring to the previous page (11-4).

11.4. Maintenance once every three months

- **Washing the Diluent tank and the Washer tank**

- (1) Necessary items
 - Hypochlorous acid solution (domestic chlorine-based bleach, or the like)
- (2) Thoroughly wash the tanks with tap water.
- (3) Pour about 500 ml of tap water into each tank, add about 5 mL of hypochlorous acid solution to each, close the lids, and then wash the tanks by shaking them well.
If you see that the tank is still contaminated, fill it with a hypochlorous acid solution and leave it to stand for at least one hour.
- (4) Rinse the tank thoroughly with tap water so that no hypochlorous acid remains inside and finally rinse it with CAP Class I or CLSI Type 1 Reagent Grade water. If you do not use the tank immediately, keep it thoroughly dry.
If a diluent or a washer solution has been prepared and left in a spare tank, wash the spare tank in the same way.

- **Washing the Diluent and Washer tubes in the AIA-900**

Wash the tubes as well as the tanks.

Please note that this work will take about one hour.

- (1) Necessary items
 - Beaker or other container (of at least 1 liter capacity)
 - Hypochlorous acid solution (domestic chlorine-based bleach, or the like)
- (2) Pour about a liter of purified water (not tap water) into a clean beaker or other container, add about 10 ml of hypochlorous acid solution, and gently agitate the mixture.
- (3) Immerse the end of the suction pipe coming from each of the Diluent and Washer tanks in this solution. Please be careful not to soak the metal sensor portion in the hypochlorous acid solution.
- (4) Carry out **“5: PRIME DILUENT”** on the MAINTENANCE screen a total of five times in order to fill the tubes with hypochlorous acid solution. Next, carry out **“6: PRIME BF WASH”** a total of five times.





Be sure to enter "5" on the numeric keypad. Otherwise, the solution in the tubing is not completely replaced.

During a liquid discharge operation, an error message informing the operator of insufficient liquid or discharge trouble may sometimes appear. This is due to the fact that the sensor cannot detect the liquid while CAP Class I or CLSI Type 1 Reagent Grade water or a hypochlorous acid solution is being discharged, so proceed with the work without worrying about the error alarm.

- (5) There is a possibility of the suction pipe and the metal sensor being contaminated as well, so wipe these parts with cleaning wipe (disposable paper towel), moistened with 70% ethanol or 70% isopropyl alcohol solution. Hypochlorous acid solution also remains on these parts, so wipe it away as well.
- (6) Obtain a beaker, or other container, containing about 1 liter of purified water, and immerse the end of the suction pipe in the water. (Wash away hypochlorous acid solution remaining on the metal sensor with CAP Class I or CLSI Type 1 Reagent Grade water.)
- (7) Leave the beaker to stand for about 5 minutes.
(This is to increase the disinfecting effect of the hypochlorous acid solution.)
- (8) Carry out "**5: PRIME DILUENT**" and also "**6: PRIME BF WASH**" on the MAINTENANCE screen five times each, in order to completely wash away the hypochlorous acid solution in the tubes.
- (9) Prepare the Diluent and Washer in disinfected tanks, and install the suction tubes.
(Take care not to install the Diluent tank and the Washer tank in reverse.)
- (10) Carry out "**5: PRIME DILUENT**" and also "**6 PRIME BF WASH**" on the MAINTENANCE screen five times each, in order to completely replace the liquids in the tubes.

11.5. If the Substrate tube is found to be contaminated (rising of the 4MU background)

- **Normal method**

If you suspect that the 4MU background has risen due to contamination of the Substrate tube, wash the inside of the tube using the following procedure.

- (1) Replace the Substrate bottle with a bottle containing 70% ethanol or 70% isopropyl alcohol solution. After doing this, wipe the outside of the tube that is to be inserted into the Substrate bottle using cleaning wipe (disposable paper towel), moistened with 70% ethanol or 70% isopropyl alcohol.
- (2) Select **"7: REPLACE SUBSTRATE"** on the MAINTENANCE screen, and press the



button. The Substrate replacement operation will commence. Enter "5" on the

numeric keypad, and press the  button. The Substrate line will be washed 5 times with 70% ethanol or 70% isopropyl alcohol solution.



If you wish to assay samples immediately after doing this, re-start the AIA-900; carry out a Daily Check according to **6.4 Daily check (without a sorter)** or **6.5 Daily check (with a sorter)** replace the 70% ethanol or 70% isopropyl alcohol solution with the Substrate and measure the Substrate background.

- **If satisfactory results are not obtained using the normal method**

If the effect of washing the tubes by passing a 70% ethanol or 70% isopropyl alcohol solution through them is insufficient, it is recommended that you carry out a washing with nitric acid solution.

Section 11 Maintenance

- (1) Replace the Substrate bottle with a bottle containing a 70% ethanol or 70% isopropyl alcohol solution.
- (2) Carry out a Substrate replacement operation repeatedly so as to replace the Substrate inside the tube with a 70% ethanol or 70% isopropyl alcohol solution.

Here, carry out the replacement operation a total of three times.

Select **"7. REPLACE SUBSTRATE"** on the MAINTENANCE screen and press the



button. Enter "3" on the numeric keypad, and press the



The Substrate replacement operation will start.

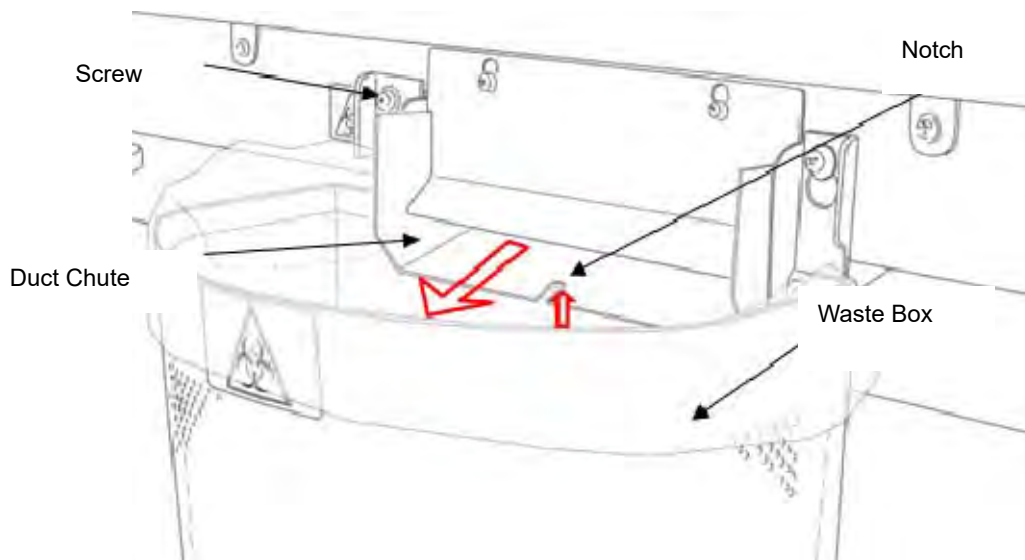


- (3) Obtain 0.14 mol/L (0.14 N) ^(*) nitric acid solution. (Mix concentrated nitric acid and CAP Class I or CLSI Type 1 Reagent Grade water in the proportion 1:100.)
(*) Nitric acid that has been diluted in advance to 0.1 mol/L (0.1 N) is commercially available.
In this case, the concentration of nitric acid need not be exactly 0.14 mol/L, so use it as it is.
- (4) Replace the bottle containing a 70% ethanol or 70% isopropyl alcohol solution with a vial containing 0.14 mol/L of nitric acid solution.
- (5) Carry out a Substrate replacement operation repeatedly so as to replace the Substrate inside the tube with nitric acid solution. The operation method is the same as that of (2). **(Carry out the replacement operation a total of three times.)**
- (6) Leave the AIA-900 to stand for about five minutes.
- (7) Re-install the bottle containing a 70% ethanol or 70% isopropyl alcohol solution.
- (8) Carry out a Substrate replacement operation repeatedly so as to replace the liquid inside the tube with a 70% ethanol or 70% isopropyl alcohol solution. The operation method is the same as that of (2). **(Carry out the replacement operation a total of three times.)**
- (9) When this procedure is followed by the assay of specimens, re-start the AIA-900; carry out a Daily Check according to **"6.4 Daily check (without a sorter)"** or **"6.5 Daily check (with a sorter)"**; replace the 70% ethanol or 70% isopropyl alcohol solution with the Substrate and measure the Substrate background.

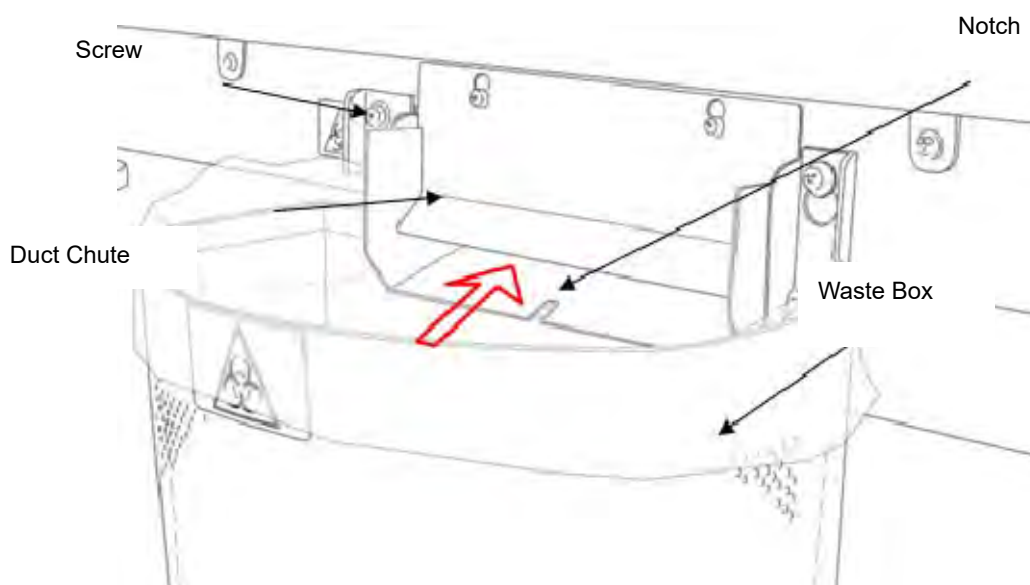
11.6. Replacement of the Duct Chute

If the face of the Duct Chute becomes dirty, waste reagent cups, waste tips and so on may be trapped on it, and it may cause further troubles. To avoid it replace the Duct Chute following the procedure below.

- (1) Disengage the notch in the Duct Chute from the Waste Duct, and take off the Duct Chute from the Waste Duct.



- (2) Insert the new Duct Chute into the Waste Duct until the notch in the Duct Chute engages with the screw on the Waste Duct.



Be sure to wear gloves when replacing the Duct Chute in order to prevent the risk of infection.

11.7. Others

11.7.1.If the AIA-900 is contaminated

Wipe away dirt on the AIA-900 with a cloth that has been immersed in a neutral detergent.

If the AIA-900 is very dirty, wipe away the dirt with a cloth that has been immersed in 70% ethanol or 70% isopropyl alcohol solution.

If moisture remains on the surface of the AIA-900, rusting may occur.

11.7.2.When not using the AIA-900 for a long period

When you do not intend using the AIA-900 for a long period, it is recommended that you discard the Washer and Diluent being used, and flush out the feed lines for these liquids with CAP Class I or CLSI Type 1 Reagent Grade water. Also, be sure to discard the Waste in the Waste tanks, and discard the waste test cups and waste tips. Keep the Substrate feed line filled with a 70% ethanol or 70% isopropyl alcohol solution. Also, switch OFF the power of the AIA-900.

11.7.3.Starting the AIA-900 after it has not been used for a long period

If the AIA-900 has not been used for a long period, there is a possibility of the Washer crystallizing on the end of the B/F wash probe, which may prevent the Washer from being discharged normally or result in incomplete suction of the Washer. For this reason, clean the Washer probe before restarting the AIA-900.

Also, when a Daily Check is being carried out, a Washer discharge fault or Diluent discharge fault error message may occur, however this is due to the air in the liquid feed lines being insufficiently expelled. In such a case, carry out **“5. PRIME DILUENT”** and **“6. PRIME BF WASH”** on the MAINTENANCE screen at least five times each, and then carry out a Daily Check.

Also, wash the inside of the Substrate feed line with nitric acid solution, then replace the nitric acid solution with a 70% ethanol or 70% isopropyl alcohol solution, and then replace the 70% ethanol or 70% isopropyl alcohol I solution with Substrate.

Section 12 Flags and Error Messages

12.1. Detailed Meanings of Flags and Handling

There are two kinds of flags attached to the assay results where applicable. One is the "error flag" which is attached if an assay did not end normally due to some kind of trouble and the other is the "user flag (normal value, abnormal value)", which help you judge the assay result. Depending upon the error status, there are cases in which error flags are attached and assay results can be obtained and cases in which they are attached but assay results cannot be obtained. If no flag is attached to the assay result, it means that the assay ended normally. If an error was detected and an assay result was not obtained, refer to this section and the handling shown there.

Section 12 Flags and Error Messages

Instrument Flag	Calculation Flag	Decision Flag	Priority Flag	Rate Value	Conc. Value	ASTM Flag	to Host
SE	Blank	Blank	SE	Blank	Blank	A	0 / Blank
AE	Blank	Blank	AE	Blank	Blank	A	0 / Blank
LE	Blank	Blank	LE	Blank	Blank	A	0 / Blank
IS	Blank	Blank	IS	Blank	Blank	A	0 / Blank
MF	Blank	Blank	MF	Blank	Blank	A	0 / Blank
RF	Blank	Blank	RF	Blank	Blank	A	0 / Blank
SP	Blank	Blank	SP	Blank	Blank	A	0 / Blank
PS	Blank	Blank	PS	Blank	Blank	A	0 / Blank
SS	Blank	Blank	SS	Blank	Blank	A	0 / Blank
RS	Blank	Blank	RS	Blank	Blank	A	0 / Blank
ES	Blank	Blank	ES	Blank	Blank	A	0 / Blank
TS	Blank	Blank	TS	Blank	Blank	A	0 / Blank
NB	Blank	Blank	NB	Blank	Blank	A	0 / Blank
LS	Blank	Blank	LS	Blank	Blank	A	0 / Blank
WS	NC,CE,DL	Blank	WS	Rate(*1)	Blank	A	0 / Blank
WS	DO	Blank	WS	Blank	Blank	A	0 / Blank
WS	Other	>H, <L	WS	Rate	Blank	A	Assay Range / 0 / Blank
WS	Other	Other	WS	Rate	Conc.	A	Conc.
WU	Blank	Blank	WU	Blank	Blank	A	0 / Blank
BS	NC,CE,DL	Blank	BS	Rate (*1)	Blank	A	0 / Blank
BS	DO	Blank	BS	Blank	Blank	A	0 / Blank
BS	Other	>H, <L	BS	Rate	Blank	A	Assay Range / 0 / Blank
BS	Other	Other	BS	Rate	Conc.	A	Conc.
DS	Blank	Blank	DS	Rate	Blank	A	0 / Blank
SC	Blank	Blank	SC	Rate	Blank	A	0 / Blank
UC	NC,CE,DL	Blank	UC	Rate(*1)	Blank	A	0 / Blank
UC	DO	Blank	UC	Blank	Blank	A	0 / Blank
UC	Other	>H, <L	UC	Rate	Blank	A	Assay Range / 0 / Blank
UC	Other	Other	UC	Rate	Conc.	A	Conc.
IO	NC,CE,DL	Blank	IO	Rate(*1)	Blank	A	0 / Blank
IO	DO	Blank	IO	Blank	Blank	A	0 / Blank
IO	Other	>H, <L	IO	Rate	Blank	A	Assay Range / 0 / Blank
IO	Other	Other	IO	Rate	Conc.	A	Conc.
NS	Blank	Blank	NS	Blank	Blank	A	0 / Blank
Blank	NC	Blank	NC(*2)	Rate	Blank	A	0 / Blank

Section 12 Flags and Error Messages

Instrument Flag	Calculation Flag	Decision Flag	Priority Flag	Rate Value	Conc. Value	ASTM Flag	to Host
Blank	CE	Blank	CE(*2)	Rate(*1)	Blank	A	0 / Blank
Blank	DO	Blank	DO(*2)	Blank	Blank	A	0 / Blank
Blank	DL	Blank	DL(*2)	Rate(*3)	Blank	A	0 / Blank
Blank	BH	>H, <L	BH(*2)	Rate	Blank	A	Assay Range / 0 / Blank
Blank	BH	Other	BH(*2)	Rate	Conc.	A	Conc.
Blank	CV	>H, <L	CV(*2)	Rate	Blank	A	Assay Range / 0 / Blank
Blank	CV	Other	CV(*2)	Rate	Conc.	A	Conc.
Blank	Blank	>H	>H	Rate	Blank	>	Assay Range / 0 / Blank
Blank	Blank	<L	<L	Rate	Blank	<	Assay Range / 0 / Blank
Blank	Blank	RH	RH	Rate	Conc.	H	Conc.
Blank	Blank	RL	RL	Rate	Conc.	L	Conc.
Blank	Blank	H	H	Rate	Conc.	H	Conc.
Blank	Blank	L	L	Rate	Conc.	L	Conc.
Blank	Blank	Blank	Blank	Rate	Conc.	N	Conc.

(*1) In case of a calculation flag, "CE", the report of a result changes according to the following conditions:

When the calculation flag at the time of rate calculation is CE: Blank

When the calculation flag at the time of concentration calculation is CE: Rate

(*2) Priority is as follows. High: DO > DL > BH > CE > NC > CV: Low

When multiple flags are generated, the flag with the highest priority is displayed.

(*3) If a DL flag is generated as a result of the measurement, the result will be reported according to the DL flag

If a DL flag and a CE flag are generated as a result of the measurement, the result will be reported according to the CE flag, although a DL flag is displayed.

[Description]

Instrument Flag:	Operation of Instrument or Reagent Flag
Calculation Flag:	Rate or Concentration calculation Flag
Decision Flag:	Flag in case of the calculated concentration decision.
Priority Flag:	The Flag with the highest priority from Instrument Flag, Calculation Flag and Decision Flag is reported to Host.
Rate Value:	Blank when Rate is incalculable
Conc. Value:	Blank when Concentration is incalculable
ASTM Flag:	Three flags (Instrument, Calculation, Decision) are converted to one flag (ASTM Priority) for host computer.
To HOST:	When the concentration is not calculated with the AIA-900, results are able to upload to the host computer as Zero or Blank. 'ASSAY RANGE / 0 / BLANK', this means the results are able to upload to host computer as Upper limit (in case of >H), lower limit (in case of <L), Zero or Blank. Upper / Lower limit are the value of Assay RANGE (H / L) in test File.

12.1.1. When concentration assay was performed

Blank (no flag)

The assay results are within the normal range.

Print and display (rate value)	: Outputs the assay values.
Print and display (concentration value)	: Outputs the assay results.
RS232C output (concentration value)	: Outputs the assay results.
RS232C output (flag)	: N

L

The assay result is less than the lower limit value (reference standard value (REF.L) of the test file) registered as a normal value. In the case of control samples, the lower control limit registered on the Control screen is used instead of the lower limit value..

Print and display (rate value)	: Outputs the assay values.
Print and display (concentration value)	: Outputs the assay results.
RS232C output (concentration value)	: Outputs the assay results.
RS232C output (flag)	: L

H

The measurement result exceeds the upper limit value (reference standard value (REF.H) of the test file) registered as a normal value. In the case of control samples, the upper control limit registered on the Control screen is used instead of the upper limit value.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results.
RS232C output (concentration value)	: Outputs the measurement results.
RS232C output (flag)	: H

RL

The measurement result is less than the lower limit value (the re-schedule value (RESCHED.L) of the test file), which constitutes the re-inspection reference value. A RL check takes place only with respect to the first measurement in which the concentration was obtained, for the same specimen and the same inspection item. Re-measurement is invalid.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results.
RS232C output (concentration value)	: Outputs the measurement results.
RS232C output (flag)	: L

RH

The measurement result is more than the upper limit value (the re-schedule value (RESCHED.H) of the test file), which constitutes the re-inspection reference value. A RH check takes place only with respect to the first measurement in which the concentration was obtained, for the same specimen and the same inspection item. Re-measurement is invalid.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results.
RS232C output (concentration value)	: Outputs the measurement results.
RS232C output (flag)	: H

12.1.2.If measurement could not be performed because the concentration of the specimen was high

DO

Measurement could not be performed because the concentration of the specimen exceeded the detection limit of the detector.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

>H

The measurement result exceeds the upper limit of measurement (upper limit of measurement of the test file (ASSAY.H)), preventing it from being calculated.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no calculation result is set in the HOST.
RS232C output (flag)	:>

12.1.3.If the concentration could not be calculated because the concentration of the specimen was low

<L

The measurement result is less than the lower limit of measurement (lower limit of measurement of the test file (ASSAY.L)), preventing it from being calculated.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no calculation result is set in the HOST.
RS232C output (flag)	:<

12.1.4.When the existence of a pseudo high value is suspected

DH

It is suspected that the measurement value is a pseudo high value.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results.
RS232C output (concentration value)	: Outputs the measurement results.
RS232C output (flag)	: A

UH

It cannot be judged if the measurement value is a pseudo high value.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results.
RS232C output (concentration value)	: Outputs the measurement results.
RS232C output (flag)	: A

12.1.5.If sampling did not take place normally

SS

Measurement cannot take place because the quantity of the specimen is insufficient.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

NS

Measurement cannot take place because there is no specimen (container).

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

SC

Clogging of the specimen occurs, preventing measurement from taking place.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

UC

A pressure abnormality occurred during suction.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results.
RS232C output (concentration value)	: Outputs the measurement results.
RS232C output (flag)	: A

12.1.6.If there is a problem with the calibration curve

NC

The concentration cannot be calculated because there is no calibration curve

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

CV

The period of validity of the calibration curve has been exceeded. Consequently, the concentration will be calculated using a calibration curve whose period of validity has been exceeded.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results. However, if the measurement value coincides with >H or <L, the output will be blank.
RS232C output (concentration value)	: Outputs the measurement results. However, if the measurement value coincides with >H or <L, the calculation result set in the HOST will be output.
RS232C output (flag)	: A

CE

Indicates calculation error due to use of approximate expression for calibration curve.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

12.1.7.If there is a problem with the reagent

BH

The substrate decomposes, and the background rises.

Print and display (rate value)	: Outputs the measurement values.
Print and display (concentration value)	: Outputs the measurement results. However, if the measurement value coincides with >H or <L, the output will be blank.
RS232C output (concentration value)	: Outputs the measurement results. However, if the measurement value coincides with >H or <L, the output conforms to the setting that is applicable to the case where no calculation result is set in the HOST.
RS232C output (flag)	: A

Section 12 Flags and Error Messages

PS

Measurement cannot take place due to insufficient test cups.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

RS

Measurement cannot take place due to insufficient conjugate.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

ES

Measurement cannot take place due to insufficient pre-treatment reagent.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

TS

Measurement cannot take place due to insufficient tips.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

LS

Measurement cannot take place due to insufficient specimen diluting solution.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

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BS

A substrate deficiency occurred.

Print and display (rate value) : Outputs the measurement values.

Print and display (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, CE, >H, or <L, the output will be blank.

RS232C output (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, or CE, the output will conform to the setting of NAS_INI in the case where a concentration value is not set in the HOST. Alternatively, if the measurement value coincides with >H or <L, the output will conform to the setting of NAS_INI in the case where a calculation value is not set in the HOST.

RS232C output (flag) : A

WS

A washer deficiency occurred.

Print and display (rate value) : Outputs the measurement values.

Print and display (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, CE, >H, or <L, the output will be blank.

RS232C output (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, or CE, the output will conform to the case where a concentration value is not set in the HOST.NAS_INI. Alternatively, if the measurement value coincides with >H or <L, the output conforms to the setting that is applicable to the case where no calculation result is set in the HOST.

RS232C output (flag) : A

DS

A diluent deficiency occurred.

Print and display (rate value) : Outputs the measurement values.

Print and display (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, CE, >H, or <L, the output will be blank.

RS232C output (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, or CE, the output will conform to the setting in the case where a concentration value is not set in the HOST.NAS_INI. Alternatively, if the measurement value coincides with >H or <L, the output conforms to the setting that is applicable to the case where no calculation result is set in the HOST.

RS232C output (flag) : A

12.1.8.If there is a problem with the instrument

IO

A temperature abnormality occurred in the incubator where the antigen-antibody reaction and the enzyme reaction take place.

Print and display (rate value) : Outputs the measurement values.

Print and display (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, CE, >H, or <L, the output will be blank.

RS232C output (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, or CE, the output will conform to the setting in the case where a concentration value is not set in the HOST. Alternately, if the measurement value coincides with >H or <L, the output conforms to the setting that is applicable to the case where no calculation result is set in the HOST.

RS232C output (flag) : A

WU

BF separation did not take place correctly.

Print and display (rate value) : Outputs the measurement values.

Print and display (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, CE, >H, or <L, the output will be blank.

RS232C output (concentration value) : Outputs the measurement results.

However, if the measurement value coincides with NC, CL, or CE, the output will conform to the setting in the case where a concentration value is not set in the HOST. Alternately, if the measurement value coincides with >H or <L, the output conforms to the setting that is applicable to the case where no calculation result is set in the HOST.

RS232C output (flag) : A

DL

A fault occurred in the detector or the substrate feed line.

Print and display (rate value) : Outputs the measurement values.

Print and display (concentration value) : Becomes blank.

RS232C output (concentration value) : Conforms to the setting that is applicable to the case where no concentration is set in the HOST.

RS232C output (flag) : A



A DL flag will be attached to the assay result if the substrate dispensing amount is insufficient.

In that case, replace the empty Substrate bottle, replace the substrate solution remaining in the substrate line with the new substrate solution, prime the system and measure the substrate background (or conduct a Daily Check), then re-run the three assays prior to the DL flag.

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SE

Measurement stopped due to an “abort” instruction issued by the operator or a fault in the equipment.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

MF

Measurement has not taken place due to a fault in the drive mechanism of the equipment.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

NB

Assay has not taken place because the aluminium seal of the test cup could not be removed.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

RF

Measurement has not taken place due to a dispensing fault in the conjugate

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

SP

Measurement has not taken place for one of the following reasons.

- The specimen could not be treated because the sorter or Reagent and Tip cover was open during pre-treatment or interim reagent dispensing.
- The reagent could not be dispensed because the Reagent and Tip cover was open during dispensing of the conjugate.
- Some other reason

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

IS

Measurement has not taken place either because of a mistake in the dilution specification or because an item outside the scope of measurement was set.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

LE

Measurement has not taken place because the lot could not be read by the camera.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

AE

Measurement has not taken place because an item could not be read by the camera.

Print and display (rate value)	: Becomes blank.
Print and display (concentration value)	: Becomes blank.
RS232C output (concentration value)	: Conforms to the setting that is applicable to the case where no concentration is set in the HOST.
RS232C output (flag)	: A

12.2. Error messages and corrective action

If an abnormality occurs during measurement, or it is difficult to continue measurement, an error message will be displayed.

When an error message is displayed, a buzzer sounds to inform the operator of the trouble, and also an error message is printed out.

If an error occurred, and the assay could not be completed normally, it is conceivable that an error flag is attached to the measurement value, preventing a result from being obtained.

12.2.1. Error codes, their meanings, and action to take

[0001] Instrument power off

Cause: The equipment went OFF during operation, preventing it from operating.

Action: Switch ON the equipment, and re-issue operating instructions. If the error re-occurs, contact the Tosoh local representative.

[0002] Instrument not initialized

Cause: Initialization of the equipment is not completed, so it cannot operate.

Action: Wait until initialization has ended, and then re-issue operating instructions.

[0003] Instrument busy

Cause: The equipment is carrying out another operation, so it cannot accept instructions.

Action: Wait until the ongoing operation has ended, and then re-issue the instructions.

[0010] Sorter drawer open

Cause: A sorter drawer "open" status was detected during operation, so the equipment is in standby.

Action: Close the sorter drawer. Operation will resume.

[0012] Reagent/Tip cover open

Cause: A Reagent/Tip cover "open" status was detected during operation, so the equipment is in standby.

Action: Close the Reagent/Tip cover. Operation will resume.

[0013] BF unit cover open

Cause: A B/F unit cover "open" status was detected during operation, so the equipment is in standby.

Action: Close the B/F unit cover. Operation will resume.

[0100] Sorter scan error

Cause: An error occurred in a mechanical part during a sorter scan, causing measurement to be paused.

Action: Open the sorter drawer, check the inside, and close the drawer again. Measurement will resume.

[0102] Tip scan error

Cause: A mechanical error occurred during a tip scan, causing measurement to be paused.

Action: Open the Reagent/Tip cover, check the inside, and close the cover again. Measurement will resume.

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[0200] Sorter drawer lock open

Cause: A sorter drawer “unlocked” status was detected during operation, causing measurement to be paused.

Action: Press the Cup Sorter key to lock the drawer. Measurement will resume.

[0201] Reagent/Tip cover lock open

Cause: A Reagent/Tip cover “unlocked” status was detected during operation. If measurement was taking place, it will be paused.

Action: Press the RT.OPEN key to lock the cover. If the equipment was in a measurement condition, measurement will resume.

[0203] BF unit lock open

Cause: A BF unit cover “unlocked” status was detected during operation.

Action: Press the BF OPEN key to lock the cover.

[0300] Waiting for sorter scan

Cause: A sorter scanning error has occurred, or the system is waiting for the scanning operation to end, causing measurement to be paused.

Action: If scanning is not taking place, open the sorter drawer, check the inside, and close the drawer again. Measurement will resume.

[0302] Waiting for Tip scan

Cause: A reagent tip scanning error has occurred, or the system is waiting for the scanning operation to end. If scanning was taking place, measurement will be paused.

Action: If scanning is not taking place, open the Reagent/Tip cover, check the inside, and close the cover again.

[0401] Reag/Tip sched. to start soon

Cause: The tip mounting and reagent dispensing operations for carrying out pre-treatment and conjugate dispensing are scheduled to take place in 2 minutes' time; however the system has received a reagent/tip pause instruction. Unless action is taken, the applicable processes will not take place, and an SP flag will be attached to the measurement item.

Action: Complete replenishing of the reagent/tip within one minute, and close the drawer.

[0410] Reagent bottle not installed

Cause: The necessary reagent bottle has not been set, so operation will stop.

Action: Set the reagent bottle, and then operate the equipment again.

[1010] Receive timeout from LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: Please contact the Tosoh local representative.

[1011] Receive timeout from PC

Cause: The message expected at RS232C CH1 was not received within 30 seconds.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

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[1020] Too much receive from LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: Please contact the Tosoh local representative.

[1021] Too much receive from PC

Cause: A message of 256 or more characters was received at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

[1030] Overrun error from LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: Please contact the Tosoh local representative.

[1031] Overrun error from PC

Cause: An overrun of the hardware was detected at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

[1040] Frame error from LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: If the trouble reoccurs when the power is switched ON again, please contact the Tosoh local representative.

[1041] Frame error from PC

Cause: A hardware frame error was detected at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable.

[1050] Parity error from LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: Please contact the Tosoh local representative.

[1051] Parity error from PC

Cause: A hardware parity error was detected at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

[1060] Buffer overflow from LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: Please contact the Tosoh local representative.

[1061] Buffer overflow from PC

Cause: 512 or more characters were received at RS232C CH1 at the same time.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

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[1070] Transmission timeout to LCD

Cause: Data transfer was not completed within 10 seconds at RS232C CH0.

Action: Please contact the Tosoh local representative.

[1071] Transmission timeout to PC

Cause: Data transfer was not completed within 10 seconds at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, contact the Tosoh local representative.

[1101] Unable to send to Slave1

Cause: FIFO FULL was detected continuously during a FIFO CH1 write operation.

Action: Please contact the Tosoh local representative.

[1102] Unable to send to Slave2

Cause: FIFO FULL was detected continuously during a FIFO CH2 write operation.

Action: Please contact the Tosoh local representative.

[1111] Unable to receive from Slave1

Cause: FIFO EMPTY was detected continuously during a FIFO CH1 read operation.

Action: Please contact the Tosoh local representative.

[1112] Unable to receive from Slave2

Cause: FIFO EMPTY was detected continuously during a FIFO CH2 read operation.

Action: Please contact the Tosoh local representative.

[1121] Overrun error from Slave1

Cause: Long data was detected during a FIFO CH1 read operation.

Action: Please contact the Tosoh local representative.

[1122] Overrun error from Slave2

Cause: Long data was detected during a FIFO CH2 read operation.

Action: Please contact the Tosoh local representative.

[1131] Frame error from Slave1

Cause: A framing error was detected during a FIFO CH1 read operation.

Action: Please contact the Tosoh local representative.

[1132] Frame error from Slave2

Cause: A framing error was detected during a FIFO CH2 read operation.

Action: Please contact the Tosoh local representative.

[1200] Illegal length from PC

Cause: A command length abnormality was detected during analysis of a received command.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

[1210] Invalid data from PC

Cause: An abnormality in command data was detected during analysis of a received command.

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Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

[1220] Invalid message from Slave

Cause: An abnormality in data was detected during analysis of a message received from a slave via FIFO.

Action: Please contact the Tosoh local representative.

[1300] Error when resending to LCD

Cause: Communication between the liquid crystal display and the main unit was interrupted.

Action: Please contact the Tosoh local representative.

[1301] Error when resending to PC

Cause: A retry error occurred during a resend operation at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative

[1310] No response from LCD

Cause: There was no reply from the liquid crystal display to the main unit.

Action: Please contact the Tosoh local representative.

[1311] No response from PC

Cause: There was no reply to ENQ at RS232C CH1.

Action: If the trouble reoccurs and there is no abnormality at the host computer side, check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative

[1312] Received, unused analyte order

Cause: **The host received** a request for an analyte where the ACT (active) column of the TEST FILE was not 1 (enabled).

Action: Change the ACT (active) column of the TEST FILE from 0 to 1. Alternatively, check to see if the requested analyte is correct.

[2000] Diluent shortage

Cause: An "empty" status was detected in the diluent tank at the start of measurement, so measurement will stop.

Action: Replenish the diluent and carry out measurement once again.

[2001] Washer shortage

Cause: An "empty" status was detected in the washer tank at the start of measurement, so measurement will stop.

Action: Replenish the washer, and carry out measurement once again.

[2002] Substrate shortage

Cause: An "empty" status was detected in the substrate vial at the start of measurement, so measurement will stop.

Action: Replace the substrate and carry out measurement once again. Also, even if there is substrate, if the label on the vial is not facing the front of the equipment, the sensor will not function correctly, so set the vial correctly.

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[2003] Waste tank full

Cause: A “full” status in the waste tank was detected at the start of measurement, so measurement will stop.

Action: Empty the waste tank, and carry out measurement once again.

[2009] Liquid leak

Cause: Leakage of solution was detected at the start of measurement, so measurement will stop.

Action: Please contact the Tosoh local representative.

[2010] STD cup short

Cause: An “STD cup deficiency” status was detected at the start of measurement.

Action: Set the necessary number of STD cups, and carry out measurement once again.

[2011] Sample tip short

Cause: A “tip deficiency” status was detected at the start of measurement.

Action: Set the necessary number of tips, and carry out measurement once again.

[2012] Subst and washer prime error

Cause: Priming of the substrate or washer was not completed within 5 minutes.

Action: Please contact the Tosoh local representative.

[2014] Incubator-L temperature error

Cause: The incubator temperature did not rise sufficiently at the start of measurement.

Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2015] Detector temperature error

Cause: The detector temperature did not rise adequately at the start of measurement.

Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2017] Washer temperature error

Cause: The washer temperature did not rise adequately at the start of measurement.

Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2018] Substrate temperature error

Cause: The substrate temperature did not rise adequately at the start of measurement.

Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2020] Incubator-L temp. malfunction

Cause: An abnormality occurred in the incubator temperature control at the start of measurement.

Action: Please contact the Tosoh local representative.

[2024] Detector temp. malfunction

Cause: The detector temperature did not rise adequately at the start of measurement.

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Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2026] Washer temp. malfunction

Cause: The washer temperature did not rise adequately at the start of measurement.

Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2027] Substrate temp. malfunction

Cause: The substrate temperature did not rise adequately at the start of measurement.

Action: Wait for at least 30 minutes, and if the trouble reoccurs contact the Tosoh local representative.

[2030] Sample ID mismatch error

Cause: The barcode of the specimen read by the sample loader did not match the ID of the order. A SP flag will be attached to the measurement results.

Action: Carry out a shutdown operation, then check the mounting of the specimens and also the order, and start the measurement operation once again.

[2032] No response to QUERY sent

Cause: The host computer did not reply to an inquiry from the equipment regarding the order within the designated time.

Action: Check the operation condition of the host computer, and if there is no problem check the RS232C cable and the connection condition of the cable, and then contact the Tosoh local representative.

[2033] BF unit cover not closed

Cause: BF unit cover "open" status was detected during operation, causing operation to stop.

Action: Close the BF unit cover, and carry out operation once again.

[2034] Specimen control delayed

Cause: The specimen dispensing operation was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2038] Reag/Tip control delayed

Cause: The operation of the reagent loader was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2039] D.lane control delayed

Cause: The operation of the dispense lane was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2040] Cup trans control delayed

Cause: The cup transfer operation was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

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[2043] BF wash control delayed

Cause: The BF washing operation was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2044] Substrate control delayed

Cause: The substrate dispensing operation was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2046] Detector control delayed

Cause: The operation of the detector was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2047] Incubator control delayed

Cause: The operation of the incubator was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2048] Sorter control delayed

Cause: The operation of the sorter was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2050] Scheduling delayed

Cause: The measurement schedule was not completed within the designated time during measurement control.

Action: Please contact the Tosoh local representative.

[2060] Tip short

Cause: A tip was not found during the specimen dispensing tip mounting operation. A retry will take place. If there is no improvement, a MF flag will be attached to the assay result.

Action: Replenish the tips, and do not remove them during the measurement.

[2061] Tip attach error

Cause: A tip was not detected during the tip mounting check. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Check to ensure that the tip rack is properly seated. If the trouble reoccurs, contact the Tosoh local representative.

[2062] Tip removal error

Cause: A tip was detected during the tip removal check. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2063] Tip dropped from specimen arm

Cause: A tip was not detected during liquid level detection or discharge to the test cup. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

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[2064] Specimen level detect failure

Cause: The level of a [rack ID, rack, position, specimen ID] specimen was not detected even when the specimen diluent tip was lowered to the bottom of a container. An SS flag will be attached to the assay results.

Action: Confirm that the set position of the specimen is correct, and also that the capacity of the container is adequate. If the trouble reoccurs, contact the Tosoh local representative.

[2065] SDS level detect failure

Cause: The liquid level was not detected even when the tip was lowered to the bottom of the specimen diluting solution bottle. A detection operation will be retried on another bottle, and if the liquid level still cannot be detected an LS flag will be attached to the measurement result.

Action: Replenish the specimen diluting solution. If the trouble reoccurs, contact the Tosoh local representative.

[2066] Pretreat level detect failure

Cause: The liquid level was not detected even when the tip was lowered to the bottom of the pre-treatment reagent bottle. An ES flag will be attached to the measurement result.

Action: Replenish the pre-treatment liquid. If the trouble reoccurs, contact the Tosoh local representative.

[2067] CJ level detect failure

Cause: The liquid level was not detected even when the tip was lowered to the bottom of the conjugate reagent bottle. A RF flag will be attached to the measurement result.

Action: Replenish the CJ (conjugate) reagent. If the trouble reoccurs, contact the Tosoh local representative.

[2068] DELAY level detect failure

Cause: The liquid level was not detected even when the tip was lowered to the bottom of the delay CJ (conjugate) reagent bottle. A RF flag will be attached to the measurement result.

Action: Replenish the CJ (conjugate) reagent. If the trouble reoccurs, contact the Tosoh local representative.

[2069] DELAY level detect failure

Cause: The liquid level was not detected even when the tip was lowered to the bottom of the detector calibration liquid bottle. Measurement will stop.

Action: Replenish the detector calibration liquid, and reissue operating instructions.

[2070] Unable to detect specimen level

Cause: The level of a [rack ID, rack, position, specimen ID] specimen was detected before the correct specimen level was reached. A retry will take place, and if there is no improvement, an MF flag will be attached.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2071] Unable to SDS level

Cause: The liquid level was detected before it reached the level of the specimen diluting solution. A retry will take place, and if there is no improvement an LS flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

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[2072] Unable to pre-treatment level

Cause: The liquid level was detected before it reached the level of the pre-treatment liquid. An ES flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2073] Unable to CJ level

Cause: The liquid level was detected before it reached the conjugate liquid level. A RF flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2074] Unable to DELAY level

Cause: The liquid level was detected before it reached the conjugate liquid level. A RF flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2075] Unable to D.calib level

Cause: The liquid level was detected before it reached the detector calibration liquid level. Measurement will stop.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2076] Clogging detected at specimen

Cause: The negative pressure generated by suction of a [rack ID, rack, position, specimen ID] specimen exceeded the standard value. There is a possibility that the sampling nozzle was clogged, preventing the specified quantity of specimen suction from taking place. An SC flag will be attached to the measurement result.

Action: If there is no problem with the specimen, contact the Tosoh local representative.

[2077] Clogging detected at SDS

Cause: Clogging was detected after suction of the specimen diluting solution. A retry will take place, and if there is no improvement an LS flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2078] Clogging detected at pretreat

Cause: Clogging was detected after suction of the pre-treatment liquid. In the case where a retry can be carried out, if there is no improvement an ES flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2079] Clogging detected at CJ

Cause: Clogging was detected after suction of conjugate. A RF flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2080] Clogging detected at DELAY

Cause: Clogging was detected after suction of the delay (conjugate). A RF flag will be attached to the measurement result.

Action: If the trouble reoccurs, contact the Tosoh local representative.

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[2081] Clogging detected at D.calib

Cause: Clogging was detected after suction of the detector calibration liquid. Measurement will stop.

Action: If the trouble reoccurs, contact the Tosoh local representative.

[2082] Bubble detected

Cause: Bubbles generated by suction of the [rack ID, rack, position, specimen ID] specimen were detected. An SC flag will be attached to the assay result.

Action: Confirm that there are no bubbles in the specimen. If there are no bubbles and the trouble reoccurs, contact the Tosoh local representative.

[2083] Air detected in specimen

Cause: When the level of a [rack ID, rack, position, specimen ID] specimen was 2 mm or more from the bottom of the container, the tip did not touch the specimen after suction of the specimen. A retry will take place, and if there is no improvement an MF flag will be attached to the assay result.

Action: Confirm that the set position of the specimen is correct, and also that no bubbles are being generated. If both of these items are normal but the trouble reoccurs, contact the Tosoh local representative.

[2084] Air detected at SDS

Cause: The tip did not touch the liquid level after suction of the specimen diluting solution. A retry will take place, and if there is no improvement an LS flag will be attached to the measurement result.

Action: Confirm that the set position of the reagent vial is correct, and also that no bubbles are being generated.

[2085] Air detected at pre-treatment

Cause: The tip did not touch the liquid level after suction of the pre-treatment liquid.

Action: Confirm that the set position of the reagent vial is correct, and also that no bubbles are being generated. Check the liquid level detection sensor S056, and also the liquid level detection operation and the liquid level detection sensitivity.

[2086] Air detected at CJ

Cause: The tip did not touch the liquid level after suction of CJ (conjugate).

Action: Confirm that the set position of the reagent vial is correct, and also that no bubbles are being generated. Check the liquid level detection sensor S056, and also the liquid level detection operation and the liquid level detection sensitivity.

[2087] Air detected at DELAY

Cause: The tip did not touch the liquid level after suction of the delay CJ (conjugate).

Action: Confirm that the set position of the reagent vial is correct, and also that no bubbles are being generated. Check the liquid level detection sensor S056, and also the liquid level detection operation and the liquid level detection sensitivity.

[2088] Air detected at D.calib

Cause: The tip did not touch the liquid level after suction of the detector calibration liquid.

Action: Please contact the Tosoh local representative. Replenish the detector calibration liquid. Alternatively, check the liquid level detection sensor S056, and also the liquid level detection operation and the liquid level detection sensitivity (parameter P10).

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[2089] No SDS detected

Cause: The specimen diluting solution whose presence was confirmed during the dispensing schedule was either not detected, or the bottle was found to be empty, during dispensing of the specimen diluent. The system will proceed to another bottle. A retry will take place, and if there is no improvement an LS flag will be attached to the measurement result.

Action: It is possible that the specimen diluting solution was removed during an assay. Reset the specimen diluting solution, or remove the empty specimen diluting solution bottle.

[2090] No pretreat detected

Cause: The pre-treatment liquid whose presence was confirmed during the dispensing schedule was either not found, or an empty pre-treatment liquid bottle was found during dispensing of pre-treatment liquid. The system will proceed to another bottle. A retry will take place, and if there is no improvement an ES flag will be attached to the measurement result.

Action: It is possible that the pre-treatment liquid was removed during an assay. Reset the pre-treatment liquid, or remove the empty pre-treatment liquid bottle.

[2091] No CJ detected

Cause: conjugate whose presence was confirmed during the dispensing schedule was either not detected, or the conjugate bottle was found to be empty, during dispensing of CJ. A RF flag will be attached to the measurement result.

Action: It is possible that conjugate was removed during an assay. Reset conjugate or remove the empty conjugate bottle.

[2092] No DELAY detected

Cause: Delay conjugate whose presence was confirmed during the dispensing schedule was either not detected, or the delay conjugate bottle was found to be empty, during dispensing of delay conjugate. A RF flag will be attached to the measurement result.

Action: It is possible that the delay conjugate) was removed during an assay. Reset delay conjugate or remove the empty delay conjugate bottle.

[2093] No D.calib detected

Cause: Detector calibration liquid whose presence was confirmed during the dispensing schedule was either not detected, or the detector calibration liquid bottle was found to be empty during the dispensing of detector calibration liquid. A RF flag will be attached to the measurement result.

Action: It is possible that the detector calibration liquid was removed during an assay. Reset the detector calibration liquid or remove the empty detector calibration liquid bottle.

[2094] Specimen shortage detected

Cause: It was judged from the remaining quantity of a [rack ID, rack, position, specimen ID] specimen that sampling of the specimen was impossible. An SS flag will be attached to the measurement result.

Action: Replenish the specimen and perform measurement once again. If it is considered that there is a sufficient quantity of specimen, check the position setting of the bottom of the specimen container. In the case of the primary tube, check the container shape setting and also the liquid level detection sensitivity.

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[2095] SDS shortage detected

- Cause:** The system judged from the remaining quantity of specimen diluting solution that sampling could not be performed. A LS flag will be attached to the measurement result.
- Action:** Replenish the specimen diluting solution and perform measurement once again. If it is considered that there is a sufficient quantity of specimen diluting solution, check the position setting of the bottom of the specimen diluting solution bottle and also the liquid level detection sensitivity.

[2096] Pretreat shortage detected

- Cause:** The system judged from the remaining quantity of pre-treatment liquid that sampling could not be performed. An ES flag will be attached to the measurement result.
- Action:** Replenish the pre-treatment liquid and perform measurement once again. If it is considered that there is a sufficient quantity of pre-treatment liquid, check the position setting of the bottom of the pre-treatment liquid bottle and also the liquid level detection sensitivity.

[2097] CJ shortage detected

- Cause:** The system judged from the remaining quantity of conjugate that sampling could not be performed. A RF flag will be attached to the measurement result.
- Action:** Replenish the conjugate and perform measurement once again. If it is considered that there is a sufficient quantity of conjugate, check the position setting of the bottom of the conjugate bottle and also the liquid level detection sensitivity.

[2098] DELAY shortage detected

- Cause:** The system judged from the remaining quantity of delay conjugate that sampling could not be performed. A RF flag will be attached to the measurement result.
- Action:** Replenish the delay Conjugate and perform measurement once again. If it is considered that there is a sufficient quantity of delay Conjugate, check the position setting of the bottom of the delay Conjugate bottle and also the liquid level detection sensitivity.

[2099] D.calib shortage detected

- Cause:** The system judged from the remaining quantity of detector calibration liquid that sampling could not be performed.
- Action:** Replenish the detector calibration liquid and perform measurement once again. If it is considered that there is a sufficient quantity of detector calibration liquid, check the position setting of the bottom of the detector calibration liquid bottle and also the liquid level detection sensitivity.

[2100] Specimen control timeout

- Cause:** The specimen dispensing operation started too late. A retry will be carried out, and if there is no improvement a SE flag will be attached to the measurement result. It is possible that the corrected value of the position adjustment parameter is too large.
- Action:** If the trouble reoccurs, contact the Tosoh local representative. Readjust the mechanism whose position adjustment correction is large, and perform measurement once again.

[2101] Specimen dispense timeout

- Cause:** The specimen dispensing operation started too late. A retry will be carried out, and if there is no improvement a SE flag will be attached to the measurement result. It is possible that the corrected value of the position adjustment parameter is too large.
- Action:** If the trouble reoccurs, contact the Tosoh local representative. Readjust the mechanism whose position adjustment correction is large, and perform measurement once again.

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[2102] Pretreatment dispense timeout

- Cause:** Secondary treatment of pre-treatment could not be implemented because of another error factor. A SE flag will be attached to the measurement result. It is possible that the corrected value of the position adjustment parameter is too large.
- Action:** If the trouble reoccurs, contact the Tosoh local representative. Readjust the mechanism whose position adjustment correction is large, and perform measurement once again.

[2103] CJ dispense timeout

- Cause:** Dispensing of Conjugate could not be implemented because of another error factor. A SE flag will be attached to the measurement result. It is possible that the corrected value of the position adjustment parameter is too large.
- Action:** If the trouble reoccurs, contact the Tosoh local representative. Readjust the mechanism whose position adjustment correction is large, and perform measurement once again.

[2104] DELAY dispense timeout

- Cause:** Dispensing of delay Conjugate could not be implemented because of another error factor. A SE flag will be attached to the measurement result. It is possible that the corrected value of the position adjustment parameter is too large.
- Action:** If the trouble reoccurs, contact the Tosoh local representative. Readjust the mechanism whose position adjustment correction is large, and perform measurement once again.

[2105] Diluent suction error

- Cause:** The tip did not touch the liquid level during suction of the diluent. A retry will be carried out, and if there is no improvement a DS flag will be attached to the measurement result.
- Action:** If the trouble reoccurs, contact the Tosoh local representative. Check the diluent, the adjustment of the suction position, the liquid level detection sensor S053, the liquid level detection operation, and also the liquid level detection sensitivity.

[2106] Uncertain clogging at suction

- Cause:** During suction of a [rack ID, rack, position, specimen ID] specimen, a pressure abnormality was detected. The following are conceivable causes: (1) the viscosity of the specimen is high, (2) fibrin or other semi-solid substances suspended in the specimen were sucked up, (3) air was sucked up. Measurement will continue, and an UC flag will be attached to the result.
- Action:** Ensure that there is no semi-solid matter such as fibrin in the specimen, and also confirm that there are no bubbles on the surface of the specimen, then carry out measurement once again. If the same error occurs, and the result is judged to be normal, it is conceivable that the viscosity of the specimen is high. In this case, the UC flag can be subsequently deleted. If the trouble persists, check the suction position adjustment, the specimen container bottom position, the pressure sensor S056, the clogging detection operation, and also the pressure threshold value.

[2140] Seal break failure

- Cause:** A seal break was not detected during a seal break operation. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.
- Action:** Please contact the Tosoh local representative. Check the seal break position in the dispensing lane, the seal break confirmation sensor S041, and the seal break operation.

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[2141] No cup from sorter

Cause: The cup sensor S032 did not detect the cup which entered the dispensing lane from the sorter. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact the Tosoh local representative. Check S032, the position where the cup is transferred from the sorter to the dispensing lane, the cup sensing position, and the cup release operation.

[2142] No cup from the dispensing lane

Cause: Cup sensor S032 in the dispensing lane did not detect a cup. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact the Tosoh local representative.

[2160] C.transfer not detected cup

Cause: The cup sensor S063 failed to detect the cup before it was grasped.

Action: Please contact the Tosoh local representative. Check S063, the cup pickup position, and the cup pickup operation.

[2161] C.transfer cup pickup failure

Cause: The cup sensor S063 failed to detect the cup after the cup was grasped.

Action: Please contact the Tosoh local representative. Check S063, the cup pickup position, and the cup pickup operation.

[2162] C.transfer dropped cup

Cause: The cup hold sensor failed to detect the cup before it was released.

Action: Please contact the Tosoh local representative. Check S063, the cup pickup position for each mechanism, and the cup hold mechanism.

[2163] C.transfer cup not released

Cause: The holder sensor S063 detected a cup after the cup was released.

Action: Please contact the Tosoh local representative. Check S063 and the cup release operation.

[2200] Sorter drawer open

Cause: The sorter drawing open/closed sensor S011 detected an "open" status. The sorter was stopped.

Action: Please contact the Tosoh local representative. Check S011 and also the sorter drawer opening/closing mechanism.

[2203] Sorter not found cup

Cause: The cup whose presence was confirmed during the dispensing schedule was not found when the operator went to remove the cup. A PS flag will be attached to the measurement result.

Action: It is possible that the cup was removed from the sorter during an assay. Re-issue measurement instructions.

[2204] Sorter not picked up cup

Cause: The cup hold sensor S027 failed to detect a cup during a cup pickup operation. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

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Action: Check the upper surface of the test cup for contamination; check the seal for curling, and so on. If the trouble occurs frequently, contact the Tosoh local representative. Check S027, the cup pickup position, and the cup pickup operation, and also check the cup control sensors S023 to S026, and the sorter scanning operation.

[2205] Sorter dropped cup

Cause: The cup hold sensor S027 failed to detect a cup before it was released in the dispensing lane. The sorter will be paused, and the equipment will go into a standby status.

Action: Open the sorter and remove the dropped cup. Close the sorter and then restart the assay. If the trouble occurs again, contact the Tosoh local representative.

[2215] Sorter not released cup

Cause: The cup hold sensor S027 detected a cup when the cup in the dispensing lane was released.

Action: If the trouble occurs again, contact the Tosoh local representative.

[2220] Reagent/Tip cover open

Cause: The Reagent/Tip cover open/closed sensor S092 detected an “open” status. The operation of the reagent/tip loader was stopped.

Action: If there is a problem with the cover, contact the Tosoh local representative. Check S092 and also the Reagent/Tip Rack cover opening/closing mechanism.

[2224] Incubator control timeout

Cause: System error

Action: Please contact the Tosoh local representative. Carry out measurement once again.

[2231] BF Overflow sensor 1 failure

Cause: The overflow sensor 1 S132 is detecting liquid constantly.

Action: Please contact the Tosoh local representative. Check S132.

[2232] BF Overflow sensor 2 failure

Cause: The overflow sensor 2 S133 is detecting liquid constantly.

Action: Please contact the Tosoh local representative. Check S133.

[2235] BF probe 1 suction failure

Cause: The overflow sensor 1 S132 detected liquid after a washer suction operation. A WU flag will be attached to the measurement result.

Action: Clean the wash probe ①. Check S132, the waste liquid solenoid valve SV170, the waste liquid tube, and the liquid pump LP172.

[2236] BF probe 2 suction failure

Cause: The overflow sensor 2 S133 detected liquid after a washer suction operation. A WU flag will be attached to the measurement result.

Action: Clean the wash probe ②. Check S133, the waste liquid solenoid valve SV171, the waste liquid tube, and the liquid pump LP173.

[2239] BF probe 1 purge failure

Cause: The overflow sensor 1 S132 failed to detect liquid after the washer was discharged.

Action: It is conceivable that air has entered the washer tube. Prime the tube and bleed off the air. Check the remaining quality of washer, check to see if there is air in the washer tube, and check S132, the discharge solenoid valve SV150, and the washer tube.

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[2240] BF probe 2 purge failure

Cause: The overflow sensor 2 S133 failed to detect liquid after the washer was discharged.

Action: It is conceivable that air has entered the washer tube. Prime the tube and bleed off the air. Check the remaining quality of washer, check to see if there is air in the washer tube, and check S133, the discharge solenoid valve SV151, and the washer tube.

[2243] Substrate control timeout

Cause: System error

Action: Please contact the Tosoh local representative. Carry out measurement once again.

[2300] S.loader step feed failure

Cause: The pitch sensor S071 failed to go ON after the step feed.

Action: Check to see if there is any impediment to the sample rack feed. If the trouble reoccurs, contact the Tosoh local representative. Check S071 and the step feed mechanism.

[2301] Sample rack not moved

Cause: The rack feed detection sensor S072 failed to detect rack movement when step (X1) feed took place.

Action: Check the direction of the sample rack and also whether or not there are any obstacles. If the trouble reoccurs, contact the Tosoh local representative. Check S072 and the step feed mechanism.

[2302] S.rack not moved completely

Cause: The rack feed sensor S072 failed to go OFF when step (X1) feed took place.

Action: Check to see if there is any impediment to the sample rack feed. If the trouble reoccurs, contact the Tosoh local representative. Check S072, the step feed position, and the step feed mechanism.

[2303] Samp.rack feed to BCR failure

Cause: The pitch sensor S071 failed to go OFF when step (X1) feed took place.

Action: Check to see if there is any impediment to the sample rack feed. If the trouble reoccurs, contact the Tosoh local representative. Check S071, the step feed position, and the step feed mechanism.

[2304] Samp.rack not moved to BCR

Cause: The rack feed detection sensor S072 failed to go OFF when step (X1) feed took place at the rack barcode read position during step feed of a single rack.

Action: Check to see if there is any impediment to the sample rack feed. If the trouble reoccurs, contact the Tosoh local representative. Check S072 and the step feed mechanism.

[2310] S.rack not at start position

Cause: The X1 starting point rack detection sensor S075 failed to detect a rack when the carry-in (Y1) belt was driven.

Action: Set the sample rack. Alternatively, check S075 and the carry-in belt mechanism.

[2320] Unscheduled rack start posit

Cause: When the step (X1) feed mechanism was being returned to the home position, the X1 starting point rack detection sensor S075 detected a rack, preventing the step (X1) feed mechanism from being returned to the home position.

Action: Remove the rack at the step feed starting position. Alternatively, check S075.

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[2321] S.rack not fed to out posit.

Cause: The X1 end point rack detection sensor S076 failed to detect a rack when a rack was fed to the take-out position by step (X1) feed.

Action: Check to see if there is any impediment to the sample rack feed. If the trouble reoccurs, contact the Tosoh local representative. Check S076 and the step feed operation.

[2322] S.rack not fed from out posit

Cause: The X1 end point rack detection sensor S076 detected a rack when the take-out (Y2) belt was driven.

Action: Check to see if there is any impediment to the sample rack feed. If the trouble reoccurs, contact the Tosoh local representative. Check S076 and the take-out belt mechanism.

[2323] Unscheduled rack return-start

Cause: When the return (X2) feed mechanism was being returned to the home position, the X2 starting point rack detection sensor S077 detected a rack, preventing the return (X2) feed mechanism from being returned to the home position.

Action: Remove the rack at the return feed starting point. Alternatively, check S077.

[2324] Sample rack full

Cause: The X1 end point rack detection sensors S076 and S077 detected a rack when the take-out (Y2) belt was being driven.

Action: Remove the take-out sample rack. Check S076, S077, and the take-out belt mechanism.

[2325] Unsched rack at return-end

Cause: When a rack was being returned by return (X2) feed, the X2 end point rack detection sensor S078 detected the rack, preventing it from being returned.

Action: Remove the rack in the return feed end point position. Alternatively, check S078.

[2326] Calibrator lot unmatched

Cause: During calibration, an analyte cup from a lot that was different from the lot corresponding to the lot No. of the first analyte cup was detected. This item is not used as calibration data.

Action: If necessary, set the analyte cup from the correct lot, and carry out calibration once again.

[2327] Over 5 test cups on samp.rack

Cause: More than 5 successive analyte cups were detected by the specimen container identification sensors S080 and S082. The analyte cups exceeding the 5th cup are not measured.

Action: Do not set more than 5 analyte cups successively. If no more than 5 analyte cups have been set, adjust the positions of sensors S080 and S082.

[2330] No tube in sample rack

Cause: The necessary test tube is not set in the rack.

Action: Set the test tube at the specified position in the sample rack. If the test tube has been set, adjust the positions of sensors S080 and S082.

[2331] No sample cup in sample rack

Cause: The necessary sample cup is not set in the rack.

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Action: Set the sample cup at the specified position in the rack. If the sample cup has been set, adjust the positions of sensors S080 and S082.

[2332] No test cup in sample rack

Cause: The necessary test cup is not set in the rack.

Action: Set the test cup at the specified position in the rack. If the test cup has been set, adjust the positions of sensors S080 and S082.

[3000] Diluent shortage detected

Cause: The “no liquid” sensor S140 on the diluent tank has not detected liquid. In this case, measurement will be paused.

Action: Replenish the diluent. Measurement will automatically restart. If there is adequate diluent, check S140.

[3001] Washer shortage detected

Cause: The “no liquid” sensor S150 on the washer tank has not detected liquid. In this case, measurement will be paused.

Action: Replenish the washer. Measurement will automatically restart. If there is adequate washer, check S150.

[3002] Substrate shortage detected

Cause: The “no liquid” sensor S161 on the substrate bottle has not detected liquid. In this case, measurement will be paused.

Action: Replenish the substrate. If the label on the bottle is facing the rear, set the bottle so that the label faces the front. If there is sufficient substrate, check S161.

[3003] Waste tank full

Cause: The waste sensor S170 on the waste tank detected liquid. In this case, measurement will be paused.

Action: Empty the waste tank. If the waste tank is not full, check S170.

[3004] Liquid leak detected

Cause: The drain sensor S172 detected liquid. In this case, measurement will be paused.

Action: Please contact Tosoh local representative. If there is no liquid leakage, check S172.

[3006] Sample tip shortage

Cause: An “insufficient sample tips” status was detected. In this case, measurement will be paused.

Action: Replenish the sample tips. Measurement will automatically restart.

[3009] Test cup shortage

Cause: An “insufficient cup reagent” status was detected. A PS flag will be attached to the measurement result.

Action: Replenish the cup reagent, and perform measurement once again.

[3010] STC cup shortage

Cause: An “insufficient sample treatment cups” status was detected. A PS flag will be attached to the measurement result.

Action: Replenish the sample treatment cups, and perform measurement once again.

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[3011] Sample diluent shortage

Cause: An “insufficient specimen diluting solution” status was detected. An LS flag will be attached to the measurement result.

Action: Replenish the specimen diluting solution, and perform measurement once again.

[3012] Pretreatment shortage

Cause: An “insufficient pre-treatment liquid” status was detected. An ES flag will be attached to the measurement result.

Action: Replenish the pre-treatment liquid, and perform measurement once again.

[3013] Conjugate shortage

Cause: An “insufficient Conjugate reagent” status was detected. An RS flag will be attached to the measurement result.

Action: Replenish the Conjugate reagent and perform measurement once again.

[3014] DELAY shortage

Cause: An “insufficient delay Conjugate reagent” status was detected. An RS flag will be attached to the measurement result.

Action: Replenish the delay Conjugate reagent, and perform measurement once again.

[3015] Sample diluent bottle empty

Cause: The specimen diluting solution bottle is empty.

Action: Remove the empty bottle the next time you open the Reagent/Tip cover.

[3016] Pretreatment1 bottle empty

Cause: The 1st pre-treatment liquid bottle is empty.

Action: Remove the empty bottle the next time you open the Reagent/Tip cover.

[3017] Pretreatment2 bottle empty

Cause: The 2nd pre-treatment bottle is empty.

Action: Remove the empty bottle the next time you open the Reagent/Tip cover.

[3018] Conjugate bottle empty

Cause: The Conjugate reagent bottle is empty.

Action: Remove the empty bottle the next time you open the Reagent/Tip cover.

[3019] DELAY bottle empty

Cause: The delay Conjugate reagent bottle is empty.

Action: Remove the empty bottle the next time you open the Reagent/Tip cover.

[3020] Stable temperature wait

Cause: The system is waiting for temperature control to stabilize.

Action: Wait for a while. If the temperature stabilizes, start measurement.

[3022] Incubator temp. abnormal

Cause: An incubator temperature HIGH (50 °C) signal was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the heater and the temperature sensors T123 and T124. It is necessary to switch the main power ON again.

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[3023] Washer temperature abnormal

Cause: A washer temperature HIGH (50°C) signal was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the heater and also the temperature sensor T151. It is necessary to switch the main power ON again.

[3024] Substrate temp. abnormal

Cause: A substrate temperature HIGH (50°C) signal was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the heater and also the temperature sensor T160. It is necessary to switch the main power ON again.

[3025] Detector temperature abnormal

Cause: A detector temperature HIGH (50°C) signal was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the heater and also the temperature sensor T200. It is necessary to switch the main power ON again.

[3031] Incubator temp. L-limit error

Cause: The incubator temperature fell below the lower limit (Standard: 32°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensors T123 and T124. It is necessary to switch the main power ON again.

[3032] Washer temp. L-limit error

Cause: The washer temperature fell below the lower limit (Standard: 34°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensor T151. It is necessary to switch the main power ON again.

[3033] Substrate temp. L-limit error

Cause: The substrate temperature fell below the lower limit (34°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensor T160. It is necessary to switch the main power ON again.

[3034] Detector temp. L-limit error

Cause: The detector temperature fell below the lower limit (Standard: 32°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensor T200. It is necessary to switch the main power ON again.

[3040] Incubator temp. H-limit error

Cause: The incubator temperature rose above the upper limit (Standard: 42°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and the temperature sensors T123, T124.

[3041] Washer temp. H-limit error

Cause: The washer temperature rose above the upper limit (Standard: 44°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensor T151.

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[3042] Substrate temp. H-limit error

Cause: The substrate temperature rose above the upper limit (Standard: 44°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensor T160.

[3043] Detector temp. H-limit error

Cause: The detector temperature rose above the upper limit (Standard: 42°C). No further operation will take place. An IO flag will be attached to the measurement result.

Action: Check the heater and also the temperature sensor T200.

[3049] Incubator temp. signal error

Cause: An open-circuit in the incubator temperature sensor was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the temperature sensors T123 and T124.

[3050] Washer temp. signal error

Cause: An open-circuit in the washer temperature sensor was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the temperature sensor T151.

[3051] Substrate temp. signal error

Cause: An open-circuit in the substrate temperature sensor was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the temperature sensor T160.

[3052] Detector temp. malfunction

Cause: An open-circuit in the detector temperature sensor was detected. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the temperature sensor T200.

[3058] Incubator mixing failure

Cause: The motion confirmation sensor S121 of the incubator mixing motor PM121 failed to detect mixing motion. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check PM121 and S121.

[3059] Dispense lane mixing failure

Cause: The motion confirmation sensor S033 of the dispensing lane mixing motor PM031 failed to detect mixing motion. No further operation will take place. An IO flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check PM031 and S033.

[3060] Power supply fan failure

Cause: A power supply fan STOP signal was detected. Measurement will continue.

Action: Please contact Tosoh local representative. Check the power supply after the end of measurement.

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[3061] Fluid level sensor failure

Cause: During measurement of the liquid level, the value of the signal output from the liquid level sensor S053 was lower than the hand touching level, so it is estimated that the liquid level sensor broke down. No further operation will take place. A SS, LSES, or RF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the liquid level sensor cable for breakage and also check the board.

[3062] Detector (SMP) signal error

Cause: A dropout of the sample signal from the detector was detected. Measurement will stop.

Action: Please contact Tosoh local representative. Check the detector cable for breakage and also check the sensor itself.

[3063] Detector (REF) signal error

Cause: A dropout of the reference signal from the detector was detected. Measurement will stop.

Action: Please contact Tosoh local representative. Check the detector cable for breakage and also check the sensor itself.

[3064] Fluid level signal error

Cause: When the TIP was being installed or removed, or each liquid level was being checked, the value of the signal output from the liquid level sensor S053 was lower than the hand touching level, so it is estimated that the liquid level sensor is broken. No further operation will take place. A SS or MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check the liquid level sensor cable for breakage and also check the board.

[3100] PM02x fuse blew

Cause: Blown APM020, PM021 or PM022 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM020, PM021, and PM022, and also the related wiring and board.

[3101] PM030 fuse blew

Cause: Blown PM030 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM030 and also the related wiring and board.

[3102] PM031 fuse blew

Cause: Blown PM031 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM031 and also the related wiring and board.

[3103] PM040 fuse blew

Cause: Blown PM040 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM040 and also the related wiring and board.

[3104] PM050 fuse blew

Cause: Blown PM050 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM050 and also the related wiring and board.

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[3105] PM051 fuse blew

Cause: Blown PM051 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM051 and also the related wiring and board.

[3106] PM052 fuse blew

Cause: Blown PM052 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM052 and also the related wiring and board.

[3107] PM060 fuse blew

Cause: Blown PM060 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM060 and also the related wiring and board.

[3108] PM061 fuse blew

Cause: Blown PM061 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM061 and also the related wiring and board.

[3109] PM062 fuse blew

Cause: Blown PM062 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM062 and also the related wiring and board.

[3110] PM07x fuse blew

Cause: Blown PM070, PM071, or PM072 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM070, PM071, and PM072 and also the related wiring and board.

[3111] PM090 fuse blew

Cause: Blown PM090 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM090 and also the related wiring and board.

[3112] PM100 fuse blew

Cause: Blown PM100 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM100 and also the related wiring and board.

[3113] PM110 fuse blew

Cause: Blown PM110 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM110 and also the related wiring and board.

[3114] PM120 fuse blew

Cause: Blown PM120 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM120 and also the related wiring and board.

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[3115] PM121 fuse blew

Cause: Blown PM121 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM121 and also the related wiring and board.

[3116] PM130 fuse blew

Cause: Blown PM130 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM130 and also the related wiring and board.

[3117] PM131 fuse blew

Cause: Blown M131 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM131 and also the related wiring and board.

[3118] PM134 fuse blew

Cause: Blown PM134 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check PM134 and also the related wiring and board.

[3119] LP173, LP174 fuse blew

Cause: Blown LP173 or LP174 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check LP173 and LP174, and also the related wiring and board.

[3120] VP020, SV021, DS010 fuse blew

Cause: Blown VP020, SV021, or DS010 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check VP020, SV021, and DS010, and also the related wiring and board.

[3121] SV150, SV151, SV160 fuse blew

Cause: Blown SV150 or SV151 or SV160 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check SV150, SV151 and SV160, and also the related wiring and board.

[3122] SV170, SV171 fuse blew

Cause: Blown SV170 or SV171 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check SV170, SV171 and also the related wiring and board.

[3123] LP140, LP172 fuse blew

Cause: Blown LP140 or LP172 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check LP140, LP172, and also the related wiring and board.

[3125] DS090 fuse blew

Cause: Blown DS090 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check DS090 and also the related wiring and board.

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[3126] DS153 fuse blew

Cause: Blown DS153 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check DS153 and also the related wiring and board.

[3127] HT123 fuse blew

Cause: Blown HT123 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check HT123 and also the related wiring and board.

[3128] HT152 fuse blew

Cause: Blown HT152 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check HT152 and also the related wiring and board.

[3129] HT160 fuse blew

Cause: Blown HT160 fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check HT160 and also the related wiring and board.

[3130] Fan fuse blew

Cause: Blown fan fuse was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the fan and also the related wiring and board.

[3131] MAIN F1 +5V fuse blew

Cause: Blown +5 V fuse of MAIN F1 was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the MAIN F1 fuse.

[3132] MAIN F2 +5V fuse blew

Cause: Blown +5 V fuse of MAIN F2 was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the MAIN F2 fuse.

[3133] SORT board disconnected

Cause: Signal dropout at the SORT board connection was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the SORT board connection.

[3134] SLD board disconnected

Cause: Signal dropout at the SLD board connection was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the SLD board connection.

[3135] BFC board disconnected

Cause: Signal dropout at the BFC board was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the BFC board and the MAIN board.

[3136] LQC board disconnected

Cause: Signal dropout at the LQC board was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the LQC board and the MAIN board.

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[3137] MAIN board disconnected

Cause: Signal dropout at the MAIN board connection was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the MAIN board connection.

[3138] DRV board disconnected

Cause: Signal dropout at the DRV board connection was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the DRV board connection.

[3139] Analog +15V low

Cause: Analog +15 V voltage LOW status was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the analog +15 V.

[3140] AC power fan malfunction

Cause: A breakdown of the AC supply and the built-in fan was detected. Sampling will be interrupted.

Action: Please contact Tosoh local representative. Check the AC supply.

[4031] Sorter-X home not detected

Cause: The home sensor S020 failed to be activated after the sorter X-axis moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S020 and PM020 for a possible malfunction.

[4033] Sorter-X home overrun

Cause: The home sensor S020, which is not supposed to be activated after the sorter X-axis moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S020 and also check to see the cause of slipping, and so on, that occurs when PM020 moves to the limit side.

[4034] Sorter-X limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sorter X-axis can move was assigned. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the X-axis can move.

[4041] Sorter-Y home not detected

Cause: The home sensor S021 failed to be activated after the sorter Y-axis moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S021 and PM021 for a possible malfunction.

[4043] Sorter-Y home overrun

Cause: The home sensor S021, which is not supposed to be activated after the sorter Y-axis moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

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Action: Please contact Tosoh local representative. Check S021 and also check to see the cause of slipping, and so on, that occurs when PM021 moves to the limit side.

[4044] Sorter-Y limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sorter Y-axis can move was assigned. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the Y-axis can move.

[4051] Sorter-Z home not detected

Cause: The home sensor S022 failed to be activated after the sorter Z-axis moved toward the home position. A retry will take place, and if there is no improvement a flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S022 and PM022 for a possible malfunction.

[4053] Sorter-Z home overrun

Cause: The home sensor S022, which is not supposed to be activated after the sorter Z-axis moves, was activated. A retry will take place, and if there is no improvement a flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S022 and also check to see the cause of slipping, and so on, that occurs when PM022 moves to the limit side.

[4054] Sorter-Z limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sorter Z-axis can move was assigned. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the Z-axis can move.

[4081] D.lane-X home not detected

Cause: The home sensor S030 failed to be activated after the dispensing lane moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S030 and PM030 for a possible malfunction.

[4083] D.lane-X home overrun

Cause: The home sensor S030, which is not supposed to be activated after the dispensing lane moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S030 and also check to see the cause of slipping, and so on, that occurs when PM030 moves to the limit side.

[4084] D.lane-X limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the dispensing lane can move was assigned. A retry will take place, and if there is no improvement a flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the dispensing lane can move.

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[4091] D.lane-MIX home not detected

Cause: The home sensor S033 failed to be activated after the dispensing lane mixing moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S033 and PM031 for a possible malfunction.

[4093] D.lane-MIX home overrun

Cause: The home sensor S033, which is not supposed to be activated after the dispensing lane mixing moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S033 and also check to see the cause of slipping, and so on, that occurs when PM031 moves to the limit side.

[4101] Seal breaker home not detect

Cause: The home sensor S040 failed to be activated after the seal breaker moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S040 and PM040 for a possible malfunction.

[4103] Seal breaker home overrun

Cause: The home sensor S040, which is not supposed to be activated after the seal breaker moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S040 and also check to see the cause of slipping, and so on, that occurs when PM040 moves to the limit side.

[4104] Seal breaker limit overrun

Cause: The home sensor S040 failed to be activated after the seal breaker moved to the limit side.

Action: Please contact Tosoh local representative. Check S040 and PM040 for a possible malfunction.

[4111] Sample-Y home not detected

Cause: The home sensor S050 failed to be activated after the specimen dispensing arm moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S050 and PM050 for a possible malfunction.

[4113] Sample-Y home overrun

Cause: The home sensor S050, which is not supposed to be activated after the specimen dispensing arm moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S050 and also check to see the cause of slipping, and so on, that occurs when PM050 moves to the limit side.

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[4114] Sample-Y limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the specimen dispensing arm Y can move was assigned. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the specimen dispensing arm Y can move.

[4121] Sample-Z home not detected

Cause: The home sensor S052 failed to be activated after the specimen dispensing arm Z moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S052 and PM051 for a possible malfunction.

[4123] Sample-Z home overrun

Cause: The home sensor S052, which is not supposed to be activated after the specimen dispensing arm Z moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S052 and also check to see the cause of slipping, and so on, that occurs when PM051 moves to the limit side.

[4124] Sample-Z bump

Cause: The specimen cap rear-end collision sensor S054 was activated while the specimen dispensing arm Z was moving toward the home position. A SS flag will be attached to the measurement result.

Action: If the cap is on the specimen, remove it and perform measurement once again. If it is not, contact Tosoh local representative. Check S054 and PM051 for a possible malfunction.

[4131] Sample-Syr home not detect

Cause: The home sensor S052 failed to be activated after the sample syringe moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S052 and PM052 for a possible malfunction.

[4133] Sample-Syr home overrun

Cause: The home sensor S055, which is not supposed to be activated after the sample syringe moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S055 and also check to see the cause of slipping, and so on, that occurs when PM052 moves to the limit side.

[4134] Sample-Syr limit overrun

Cause: A shift instruction or suction quantity corresponding to a distance exceeding the distance over which the sample syringe can move was assigned. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a suction instruction exceeding the distance over which the sample syringe can move.

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[4141] C.trans-Y home detect error

Cause: The home sensor S060 failed to be activated after the transfer Y moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S060 and PM060 for a possible malfunction.

[4143] C.trans-Y home overrun

Cause: The home sensor S060, which is not supposed to be activated after the cup transfer Y-axis moves, was activated. No further operation will take place. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S060 and also check to see the cause of slipping, and so on, that occurs when PM060 moves to the limit side.

[4144] C.trans-Y limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the cup transfer Y-axis can move was assigned. No further operation will take place. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the cup transfer Y-axis can move.

[4151] C.trans-Z home detect error

Cause: The home sensor S062 failed to be activated after the transfer Y moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S062 and PM061 for a possible malfunction.

[4153] C.trans-Z home overrun

Cause: The home sensor S062, which is not supposed to be activated after the cup transfer Z-axis moves, was activated. No further operation will take place. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S062 and also check to see the cause of slipping, and so on, that occurs when PM061 moves to the limit side.

[4154] C.trans-Z limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the cup transfer Z-axis can move was assigned. No further operation will take place. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the cup transfer Z-axis can move.

[4161] C.trans-Chuck home detect error

Cause: The home sensor S064 failed to be activated after the cup chuck moved toward the home position. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S064 and PM62 for a possible malfunction.

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[4163] C.trans-Chuck home overrun

Cause: The home sensor S064, which is not supposed to be activated after the cup transfer chuck moves, was activated. No further operation will take place. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S064 and also check to see the cause of slipping, and so on, that occurs when PM062 moves to the limit side.

[4164] C.trans-Chuck limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the cup transfer chuck can move was assigned.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the cup transfer chuck can move.

[4171] S.loader-X1 home detect error

Cause: The home sensor S070 failed to be activated after the sample loader X1-axis moved toward the home position. No further operation will take place.

Action: Remove the impediment or other cause of the error. Check S070 and PM070 for a possible malfunction.

[4173] S.loader-X1 home overrun

Cause: The home sensor S070, which is not supposed to be activated after the sample loader X1-axis moves, was activated. No further operation will take place.

Action: Remove the impediment or other cause of the error. Check S070 and also check to see the cause of slipping, and so on, that occurs when PM070 moves to the limit side.

[4174] S.loader-X1 limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sample loader X1-axis can move was assigned.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the sample loader X1-axis can move.

[4181] S.loader-X2 home detect error

Cause: The home sensor S073 failed to be activated after the sample loader X2-axis moved toward the home position. No further operation will take place.

Action: Remove the impediment or other cause of the error. Check S073 and PM071 for a possible malfunction.

[4183] S.loader-X2 home overrun

Cause: The home sensor S073, which is not supposed to be activated after the sample loader X2-axis moves, was activated.

Action: Remove the impediment or other cause of the error. Check S073 and also check to see the cause of slipping, and so on, that occurs when PM071 moves to the limit side.

[4184] S.loader-X2 limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sample loader X2-axis can move was assigned.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the sample loader X2-axis can move.

4=Monitoring method: If the distance over which the sample loader X2-axis can move is exceeded after the sample loader has moved the specified distance to the limit side, an error will occur.

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[4191] S.loader-X3 home detect error

Cause: The home sensor S0701 failed to be activated after the sample loader X3-axis moved toward the home position. No further operation will take place.

Action: Remove the impediment or other cause of the error. Check S0701 and PM072 for a possible malfunction.

[4193] S.loader-X3 home overrun

Cause: The home sensor S0701, which is not supposed to be activated after the sample loader X3-axis moves, was activated.

Action: Remove the impediment or other cause of the error. Check S0701 and also check to see the cause of slipping, and so on, that occurs when PM072 moves to the limit side.

[4194] S.loader-X3 limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sample loader X3-axis can move was assigned.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the sample loader X3-axis can move.

[4231] Reag/Tip-X home detect error

Cause: The home sensor S090 failed to be activated after the reagent loader moved toward the home position. No further operation will take place.

Action: Remove the impediment or other cause of the error. Check S090 and PM090 for a possible malfunction.

[4233] Reag/Tip-X home overrun

Cause: The home sensor S090, which is not supposed to be activated after the reagent loader moves, was activated. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S090 and also check to see the cause of slipping, and so on, that occurs when PM090 moves to the limit side.

[4234] Reag/Tip-X limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the reagent loader can move was assigned. A retry will take place, and if there is no improvement a MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the reagent loader can move.

[4251] Wash-Syr home detect error

Cause: The home sensor S100 failed to be activated after the wash syringe moved toward the home position. No further operation will take place.

Action: Remove the impediment or other cause of the error. Check S100 and PM100 for a possible malfunction.

[4253] Wash-Syr home overrun

Cause: The home sensor S100, which is not supposed to be activated after the wash syringe moves, was activated. A WU flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S100 and also check to see the cause of slipping, and so on, that occurs when PM100 moves to the limit side.

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[4254] Wash-Syr limit overrun

- Cause:** A shift instruction or washing quantity corresponding to a distance exceeding the distance over which the substrate syringe can move was assigned.
- Action:** Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the substrate syringe can move.

[4261] Substrate-Syr home detect error

- Cause:** The home sensor S110 failed to be activated after the substrate syringe moved toward the home position. A BS flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Check S110 and PM110 for a possible malfunction.

[4263] Substrate-Syr home overrun

- Cause:** The home sensor S110, which is not supposed to be activated after the substrate syringe moves, was activated. A BS flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Check S110 and also check to see the cause of slipping, and so on, that occurs when PM110 moves to the limit side.

[4264] Substrate-Syr limit overrun

- Cause:** A shift instruction or dispensing quantity corresponding to a distance exceeding the distance over which the substrate syringe can move was assigned. A BS flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the substrate syringe can move.

[4271] Incubator home detect error

- Cause:** The home sensor S120 failed to be activated after the incubator moved toward the home position. Measurement will be interrupted.
- Action:** Please contact Tosoh local representative. Check S120 and PM120 for a possible malfunction.

[4273] Incubator home overrun

- Cause:** The home sensor S120, which is not supposed to be activated after the incubator moves, was activated. Measurement will be interrupted.
- Action:** Please contact Tosoh local representative. Check S120 and also check to see the cause of slipping, and so on, that occurs when PM120 moves to the limit side.

[4275] Incubator slipping detected

- Cause:** While the incubator was moving over the specified distance, the stipulated number of detections did not occur at the home sensor S120. Measurement will be interrupted.
- Action:** Please contact Tosoh local representative. Check S120 and PM120 for a possible malfunction.

[4276] Incubator positioning error

- Cause:** The home sensor S120, which is supposed to detect the incubator when it reaches the target position, failed to be activated. Measurement will be interrupted.
- Action:** Please contact Tosoh local representative. Check S120 and PM120 for a possible malfunction.

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[4277] Incubator positioning overrun

- Cause:** The home sensor S120, which is not supposed to detect the incubator before it reaches the target position, detected the incubator. Measurement will be interrupted.
- Action:** Please contact Tosoh local representative. Check S120 and PM120 for a possible malfunction.

[4281] Incub-MIX home not detected

- Cause:** The home sensor S121 failed to be activated after the incubator mixing moved toward the home position.
- Action:** Please contact Tosoh local representative. Check S121 and PM121 for a possible malfunction.

[4283] Incub-MIX home overrun

- Cause:** The home sensor S121, which is not supposed to be activated after the incubator mixing moves, was activated.
- Action:** Please contact Tosoh local representative. Check S121 and also check to see the cause of slipping, and so on, that occurs when PM121 moves to the limit side.

[4311] Wash1-Z home detect error

- Cause:** The home sensor S130 failed to be activated after the BF probe 1 moved toward the home position. A MF flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Check S130 and PM130 for a possible malfunction.

[4313] Wash1-Z home overrun

- Cause:** The home sensor S130, which is not supposed to be activated after the BF probe 1 moves, was activated. A MF flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Check S130 and also check to see the cause of slipping, and so on, that occurs when PM130 moves to the limit side.

[4314] Wash1-Z limit overrun

- Cause:** A shift instruction or dispensing quantity corresponding to a distance exceeding the distance over which the 1st BF washing Z can move was assigned. A MF flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the 1st BF washing Z can move.

[4321] Wash2-Z home detect error

- Cause:** The home sensor S131 failed to be activated after the BF probe 2 moved toward the home position. A MF flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Check S131 and PM131 for a possible malfunction.

[4323] Wash2-Z home overrun

- Cause:** The home sensor S131, which is not supposed to be activated after the BF probe 2 moves, was activated. A MF flag will be attached to the measurement result.
- Action:** Please contact Tosoh local representative. Check S131 and also check to see the cause of slipping, and so on, that occurs when PM131 moves to the limit side.

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[4324] Wash2-Z limit overrun

Cause: A shift instruction or dispensing quantity corresponding to a distance exceeding the distance over which the 2nd BF washing Z can move was assigned. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the 2nd BF washing Z can move.

[4331] Wash-Y home detect error

Cause: The home sensor S135 failed to be activated after washing Y moved toward the home position. A BS flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S135 and PM134 for a possible malfunction.

[4333] Wash-Y home overrun

Cause: The home sensor S135, which is not supposed to be activated after the washing probe 1 moves, was activated. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S135 and also check to see the cause of slipping, and so on, that occurs when PM134 moves to the limit side.

[4334] Wash-Y limit overrun

Cause: The limit sensor S136, which is not supposed to be activated after the washing Y moves, was activated. A MF flag will be attached to the measurement result.

Action: Please contact Tosoh local representative. Check S136 and also check the distance moved to the limit side.

[4336] Wash-Y positioning error

Cause: The home sensor S135, which is supposed to detect the incubator when it reaches the target position, failed to be activated. Measurement will be interrupted.

Action: Please contact Tosoh local representative. Check S135 and PM134 for a possible malfunction.

[4337] Wash-Y positioning overrun

Cause: The home sensor S135, which is not supposed to detect the incubator before it reaches the target position, detected the incubator. Measurement will be interrupted.

Action: Please contact Tosoh local representative. Check S135 and PM134 for a possible malfunction.

[4703] Cup search home overrun

Cause: The home sensor S021, which is not supposed to be activated after the cup search moves, was activated. The sorter is in a “paused” status.

Action: Please contact Tosoh local representative. Check S021 and also check to see the cause of slipping, and so on, that occurs when PM021 moves to the limit side.

[4704] Cup search limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sorter Y-axis can move was assigned. The sorter is in a “paused” status.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the sorter Y-axis can move.

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[4713] Tray search home overrun

Cause: The home sensor, which is not supposed to be activated after a tray search, was activated. The sorter is in a “paused” status.

Action: Please contact Tosoh local representative. Check S021 and also check to see the cause of slipping, and so on, that occurs when PM021 moves to the limit side.

[4714] Tray search limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the sorter Y-axis can move was assigned. The sorter is in a “paused” status.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the sorter Y-axis can move.

[4718] Tray search BCR error

Cause: At the tray barcode read stage, a read instruction could not be executed normally in the BCR. The sorter will be paused.

Action: Please contact Tosoh local representative. Check BCR and the board.

[4723] Tip search home overrun

Cause: The home sensor S090, which is not supposed to be activated after the tip reagent loader moves, was activated. The reagent tips will be paused.

Action: Please contact Tosoh local representative. Check S090 and also check to see the cause of slipping, and so on, that occurs when PM090 moves to the limit side.

[4724] Tip search limit overrun

Cause: A shift instruction or adjustment value corresponding to a distance exceeding the distance over which the tip reagent loader can move was assigned. The reagent tips will be paused.

Action: Please contact Tosoh local representative. Take care not to assign a shift instruction exceeding the distance over which the tip reagent loader can move.

[4725] Tip search tip sensor error

Cause: During a tip search, the tip sensor was activated at a location where there was no tip.

Action: Please contact Tosoh local representative. Check the tip sensor S093.

[4730] Sorter BCR error

Cause: A read command failed to be sent to the sorter BCR.

Action: Please contact Tosoh local representative. Check the BCR (B020) and the board.

[4731] Sample loader BCR error

Cause: A read command failed to be sent to the sample loader BCR.

Action: Please contact Tosoh local representative. Check the BCR (B080) and the board.

[4734] Sorter BCR mode set failure

Cause: A mode failed to be sent to, or set in, the sorter BCR.

Action: Please contact Tosoh local representative. Check the BCR (B020) and the board

[4735] S.loader BCR mode set failure

Cause: A mode failed to be sent to, or set in, the sample loader specimen BCR.

Action: Please contact Tosoh local representative. Check the BCR (B080) and the board.

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[4811] Slave1 FIFO error

Cause: An abnormality occurred during a FIFO read operation at slave 1.

Action: Please contact Tosoh local representative. Check the MAIN board.

[4812] Slave1 RS232C error

Cause: An abnormality occurred during a BCR write operation at slave 1.

Action: Please contact Tosoh local representative. Check the MAIN board.

[4813] Slave1 CPU error

Cause: A memory error occurred at slave 1.

Action: Please contact Tosoh local representative. Check the MAIN board.

[4821] Slave2 FIFO error

Cause: An abnormality occurred during a FIFO read operation at slave 2.

Action: Please contact Tosoh local representative. Check the MAIN board.

[4822] Slave2 RS232C error

Cause: An abnormality occurred during a BCR write operation at slave 2.

Action: Please contact Tosoh local representative. Check the MAIN board.

[4823] Slave2 CPU error

Cause: A memory error occurred at slave 2.

Action: Please contact Tosoh local representative. Check the MAIN board.

[5100] Assay operation aborted!

Cause: Measurement was interrupted due to the occurrence of a phenomenon that prevented the continuation of measurement.

Action: Check the abort cause.

[5101] Detector calibration aborted!

Cause: The detector calibration was interrupted due to the occurrence of a phenomenon which prevented the continuation of the detector calibration.

Action: Check the abort cause.

[5102] Substrate BG measure aborted!

Cause: The substrate background measurement was interrupted due to the occurrence of a phenomenon which prevented the continuation of substrate background measurement.

Action: Check the abort cause.

[5103] Detector dark measure abort!

Cause: Sensor dark measurement was interrupted due to the occurrence of a phenomenon which prevented the continuation of sensor dark measurement.

Action: Check the abort cause.

[5200] No memory for cup schedule

Cause: When the dispensing schedule was being prepared, the cup reagent reservation exceeded the control ability limit of 50 types of reagents.

Action: Reduce the types of reagents for which measurement requests exist.

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[5201] No memory for reagent sched

Cause: When the dispensing schedule was being prepared, the specimen diluting solution, Conjugate, and pre-treatment reagent reservation exceeded the control ability limit of 24 types of reagents.

Action: Reduce the types of reagents for which measurement requests exist.

[5701] Command overlap to DS010

Cause: While DS010 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5703] Command overlap to PM020

Cause: While PM020 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5704] Command overlap to PM021

Cause: While PM021 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5705] Command overlap to PM022

Cause: While PM022 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5706] Command overlap to VP020

Cause: While VP020 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5707] Command overlap to SV021

Cause: While SV021 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5708] Command overlap to PM030

Cause: While PM030 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5709] Command overlap to PM031

Cause: While PM031 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5710] Command overlap to PM040

Cause: While PM040 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5711] Command overlap to PM050

Cause: While PM050 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5712] Command overlap to PM051

Cause: While PM051 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

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[5713] Command overlap to PM052

Cause: While PM052 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5714] Command overlap to PM060

Cause: While PM060 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5715] Command overlap to PM061

Cause: While PM061 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5716] Command overlap to PM062

Cause: While PM062 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5717] Command overlap to PM070

Cause: While PM070 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5718] Command overlap to PM071

Cause: While PM071 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5719] Command overlap to PM072

Cause: While PM072 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5720] Command overlap to DM073

Cause: While DM073 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5721] Command overlap to DM074

Cause: While DM074 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5723] Command overlap to PM090

Cause: While M090 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5724] Command overlap to DS090

Cause: While DS090 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5725] Command overlap to PM100

Cause: While PM100 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5726] Command overlap to PM110

Cause: While PM110 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

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[5727] Command overlap to PM120

Cause: While PM120 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5728] Command overlap to PM121

Cause: While PM121 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5731] Command overlap to PM130

Cause: While PM130 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5732] Command overlap to PM131

Cause: While PM131 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5733] Command overlap to PM134

Cause: While PM134 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5735] Command overlap to SV150

Cause: While SV150 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5736] Command overlap to SV151

Cause: While SV151 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5738] Command overlap to DS153

Cause: While DS153 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5740] Command overlap to SV160

Cause: While SV160 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5741] Command overlap to SV170

Cause: While SV170 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5742] Command overlap to SV171

Cause: While SV171 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

[5746] Command overlap to DS180

Cause: While DS180 was operating, a new operation instruction was issued.

Action: Carry out measurement or operation once again.

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[5800] Activated control timeout

Cause: An operation was not completed within the assumed period.

Action: Perform the operation once again.

[5801] No response from Slave1

Cause: A response was not obtained from slave 1 within the stipulated period.

Action: If the trouble occurs frequently despite switching the power ON again, contact Tosoh local representative. Check the MAIN board.

[5802] No response from Slave2

Cause: A response was not obtained from slave 2 within the stipulated period.

Action: If the trouble occurs frequently despite switching the power ON again, contact Tosoh local representative. Check the MAIN board.

[5900] Time-load for all tasks 50ms

Cause: A period of 50 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5901] Time-load for all tasks 75ms

Cause: A period of 75 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5902] Time-load for all tasks 100ms

Cause: A period of 100 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5903] Time-load for all tasks 125ms

Cause: A period of 125 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5904] Time-load for all tasks 150ms

Cause: A period of 150 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5905] Time-load for all tasks 175ms

Cause: A period of 175 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5906] Time-load for all tasks 200ms

Cause: A period of 200 ms was consumed in processing all of the tasks.

Action: Not necessary.

[5910] Less than 100 stacks remain

Cause: The remaining stack was less than 100 words.

Action: Please contact Tosoh local representative.

[5920] Timer shortage

Cause: An insufficiency occurred in the timer.

Action: Please contact Tosoh local representative. Check the MAIN board.

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[5930] Illegal control function

Cause: An unsupported function was selected.

Action: Use a supported function.

[5931] Control branch not found

Cause: The control branch destination was not found.

Action: Switch the power ON again.

[5932] Illegal interrupt

Cause: An illegal interrupt occurred.

Action: Please contact Tosoh local representative. Check the MAIN board.

[6000] Barcode read error

Cause: The barcode on the specimen could not be read.

Action: Confirm that the barcode label is not dirty or damaged, and does not have uneven printing, then place the specimen in the rack while ensuring that the label is facing the front, and perform measurement once again. If there is no problem with the barcode label, contact Tosoh local representative. It is necessary to inspect and adjust the read position of the BCR.

[6001] No order

Cause: The corresponding order was not found. In the query mode, when an inquiry was sent to the host computer, the corresponding order was not found.

Action: Check the order in the corresponding to the barcode.

[6002] Detected cup is not active

Cause: An analyte cup that is not registered in the TEST FILE or is invalid was detected.

Action: Check to see if the installed analyte cup is correct, and if it is the object of measurement register it in the TEST FILE, and make a valid setting for it. If the trouble persists, it will be necessary to check the camera, so contact Tosoh local representative. It will be necessary to check the camera and also adjust the read position, and so on.

[6003] Order mismatch cup detected

Cause: An analyte cup that differed from the order was detected.

Action: Check the order, and if necessary carry out measurement once again. If the trouble persists, it will be necessary to check the camera, so contact Tosoh local representative. It will be necessary to check the camera and also adjust the read position, and so on.

[6004] Sample with no test cup

Cause: The analyte cup following the specimen could not be detected.

Action: Install the analyte cup and carry out measurement once again. If the trouble persists, it will be necessary to check specimen container identification sensors S080 and S082, and also adjust the detection position, so contact Tosoh local representative.

[6005] Test cup camera read error

Cause: An analyte cup could not be read with the camera.

Action: Check the label on the analyte cup to see if it is dirty or damaged. If the trouble persists, it will be necessary to check the camera, so contact Tosoh local representative. It will be necessary to check the camera and also adjust the read position, and so on.

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[6006] Skipped, position mismatch

Cause: The installation positions of specimens in the analyte registration of an assay order were different from the installation positions of sample containers in a sample rack.

Action: Set the specimen in the installation position specified in the work list. If the installation position is correct, check the installation condition of the sample container, and so on. If no problem is found, it means that the container detection sensor must be inspected, so please contact Tosoh local representative. In the case of specimen ID measurement, confirm that the assay order agrees with the specimen installation position.

[6007] The interruption rack was not found.

Cause: The sample rack bearing the rack ID specified during interruption assay was not found.

Action: Check the specified rack ID. Alternatively, check to see if the rack has a barcode label bearing the rack ID, and if there is a label whether or not it is legible. If there appears to be no problem with the label, it is necessary to inspect the barcode reader, so please contact Tosoh local representative.

[6008] The return position of the rack was not found.

Cause: At the end of interruption assay, the system searched for the sample rack in the interruption position but was unable to find it.

Action: Do not remove the sample rack that was inserted. Another conceivable cause of this error is the failure of the rack ID barcode to be read. In this case, it is necessary to inspect the barcode reader, so please contact Tosoh local representative.

[6009] The specimen to be re-assay was not found.

Cause: The system searched for the target specimen during automatic re-assay, but did not find it.

Action: During automatic re-assay, do not remove the target specimen or the sample rack. Another conceivable cause of this error is the failure of the specimen barcode or the rack ID barcode to be read. In this case, it is necessary to inspect the barcode reader, so please contact Tosoh local representative.

[6010] Cup with no sample.

Cause: A sample could not be detected. Alternatively, there was a blank position between a sample and a test cup.

Action: Check to see if a sample and a cup are correctly installed in the sample rack.

[6011] Sample with no STC.

Cause: An STC cup that should have been set was not found

Action: Check to see if STC cups have been correctly installed in a sample rack.

[6100] USB stick not ready

Cause: A USB memory could not be detected when a USB read or write operation was performed.

Action: Set a USB memory. Set the USB memory once again, and if the trouble persists restart the equipment, and repeat the operation. Also, check to see if the USB memory is broken. It is also conceivable that the USB memory manufactured by a particular company may be incompatible with the system, so try using a USB memory made by a different company. If the trouble persists, contact Tosoh local representative.

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[6101] USB stick file not found

Cause: The target file was not found in the USB memory.

Action: Set the correct USB memory, and carry out operation once again.

[6102] USB stick hard error

Cause: The contents of the USB memory could not be read correctly.

Action: Carry out operation once again. If the trouble reoccurs, use a new USB memory.

[6103] USB stick file full

Cause: The USB memory does not have sufficient space for data to be written to it.

Action: Set a new USB memory, and carry out operation once again.

[6104] USB stick access error

Cause: The contents of the USB memory could not be read correctly.

Action: Carry out operation once again, and if the trouble reoccurs restart the equipment and repeat the operation. If the trouble persists, use a new USB memory.

[6110] Reset language due to error

Cause: An error occurred while a language file was being read. The language is English (factory setting).

Action: Carry out operation once again, and if the trouble reoccurs contact Tosoh local representative. It will be necessary to obtain a new system USB memory.

[6111] Reset parameters due to error

Cause: An error occurred while the parameter file was being read. The parameters will be initialized.

Action: Carry out operation once again, and if the trouble reoccurs contact Tosoh local representative. It will be necessary to obtain a new system USB memory.

[6112] Parameter error in PRM file

Cause: An undefined parameter was detected in the parameter file. That parameter will be ignored.

Action: It is conceivable that the parameter file is corrupt. Carry out operation once again, and if the trouble reoccurs use a previous parameter file, for example.

[6113] Result ver error in RES file

Cause: Operator attempted to send result data of a different version from that of the instrument from a USB memory stick to the instrument.

Action: Result data of a version that is different from that of the instrument cannot be sent to the instrument.

[6200] Printer offline

Cause: The printer was not in a "print enable" status when a printing operation for carried out.

Action: Correctly reset the recording paper, set the printer lever correctly, and carry out a paper feed operation as a check. If the trouble persists, contact Tosoh local representative. It will be necessary to check the printer.

[6201] Printer hard error

Cause: When a printing operation was performed, the printer was found to be broken.

Section 12 Flags and Error Messages

Action: Correctly reset the recording paper, set the printer lever correctly, and carry out a paper feed operation as a check. If the trouble persists, contact Tosoh local representative. It will be necessary to check the printer.

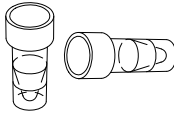
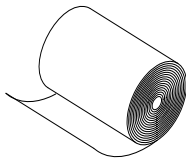
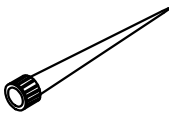
[6202] Printer paper empty

Cause: When a printing operation was performed, a “no paper” status was detected.

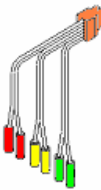
Action: Replenish the recording paper. If there is paper, set it correctly, set the printer lever correctly, and then try performing a paper feed operation. If the trouble persists, contact Tosoh local representative. It will be necessary to check the printer.

Section 13 Consumables/Options

13.1. Consumables

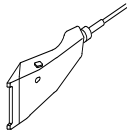
Part No.	Item name and standard	Shape and specifications	Number of items in one package
0022936	Waste bag for AIA-900		40 Pieces
0020107	PROBE TIP FOR AIA-1800		6 Pieces/bag
0020970	AIA-PACK DETECTOR STANDARDIZATION TEST CUP (STD cup) (Pouch containing 20 cups)		200 Cups/box
0018581	CUP AIA-21 SAMPLE (Sample cup)		1000 Cups/bag
0016612	THERMAL PAPER (2ROLL)		2 rolls/box
0019215	SAMPLE TIPS FOR AIA		1000 Tips/bag
0022937	Exhaust duct protector		20 Pieces

Section 13 Consumables/Options

Part No.	Item name and standard	Shape and specifications	Number of items in one package
0019473	DIL/WASH RESERVOIR 600-2		1
0022938	Waste 2L-tank for AIA-900		1
0021138	LEAD WIRE OF LEVEL SENSOR		1 set
0022935	Waste box for AIA-900		1

Section 13 Consumables/Options

13.2. Optional

Part No.	Item name and standard	Shape and specifications	Number of items in one package
0022944	Barcode scanner(optional) for AIA-900		1
0022931	AIA-900 9tray Sorter		1
0023066	AIA-900 9tray Sorter Stand		1
0022932	AIA-900 19tray Sorter		1
0022933	AIA-900 Analyzer stand		1
0022934	AIA-900 19tray Sorter stand		1

[illegible]

Section 14 Appendix

14.1. Specifications for barcode label and points of attention for operation

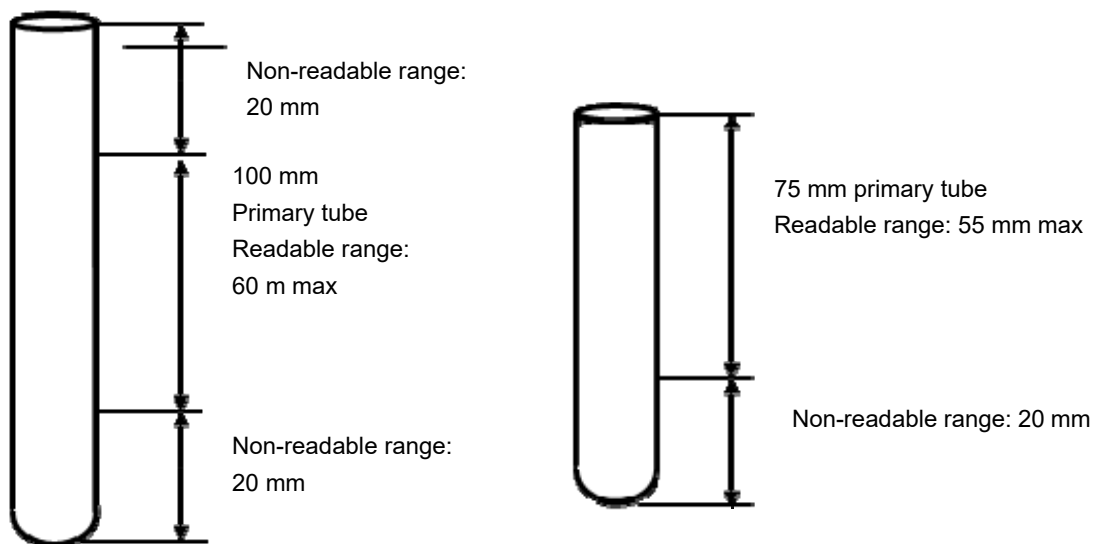
The following are specifications for a barcode label attached to a primary tube and points of attention for operation.

14.1.1. Specifications for barcode labels

Applicable codes:	CODE39, CODE128, ITF, NW-7, JAN/EAN/UPC, Industrial 2of5, and COOP2of5
Minimum element width: (Narrow width)	0.191 (Recommended 0.254 or more)
PCS:	0.5 or more (White reflectivity 75%)

14.1.2. Readable range of the barcode reader

Attach a barcode to a primary tube within the readable range illustrated with the following diagram.



Note: The readable range includes the blank margin on a barcode (quiet zone).

14.1.3. Maximum number of readable digits of a barcode on a barcode label

Examples of the maximum number of readable digits calculated from the readable range are shown below.

	Code		Element width (narrow width)	Max number of readable digits	
				75 mm	100 mm
1	CODE128		0.191 (min)	16	16
2			0.254 (normal)		
3	NW7	No C/D	0.191 (min)	16	
4		(Check digits)	0.254 (normal)	14	
5		With C/D	0.191 (min)	16	
6			0.254 (normal)	13	
7	CODE39	No C/D	0.191 (min)	16	
8			0.254 (normal)	10	
9		With C/D	0.191 (min)	16	
10			0.254 (normal)	9	
11	ITF	No C/D	0.191 (min)	16	
12			0.254 (normal)		
13		With C/D	0.191 (min)		
14			0.254 (normal)		

Note: The calculation is performed on the assumption that the thin/thick element ratio is 2.5, and each margin (quiet zone) is 2.54 mm.



- When a CODE39 and NW7 barcode is used on a 75 mm primary tube note that the number of readable digits may be restricted under certain conditions.
- The readable range may be narrowed due to the quality of the barcode label.



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