

6.3.6 Maintenance (Administrators)

Standby

When the time for which the analyzer is free from fluidic operations reaches that you have set on the “Maintenance” screen of the analyzer, the analyzer automatically enters the standby status.

On the “**Maintenance**” setup screen, administrators may set the wait time before the analyzer enters the “**Standby**” status, when the fluidic system stops working.

1. Tap “**Menu > Setup > Maintenance**” to enter the “**Maintenance**” screen.
2. Set up the wait time before the analyzer entering the standby status.

NOTE:

The allowed range is 30 to 150 minutes. Make sure you enter the valid time and in the required format.

Probe cleanser maintenance

Administrators may set up the start time for probe cleanser maintenance on the “**Maintenance**” setup screen.

1. Tap “**Menu > Setup > Maintenance**” to enter the “**Maintenance**” screen.
2. Set the start time and reminding interval for probe cleanser maintenance as needed.

Set the start time of probe cleanser maintenance. The system will perform probe cleanser maintenance for the relevant parts at the specified time according to the operating condition of the analyzer.

NOTE:

The allowed range for the start time of probe cleanser maintenance is 00:00 to 23:59. The allowed range for reminding interval is 5 to 60 minutes. Make sure you enter the valid time and in the required format.

6.3.7 Reagent Setup

Tap “**Menu > Setup > Reagent Setup**” to enter the “**Reagent Setup**” screen. For the reagent replacement steps, see “12.3.3 Replacing the Reagents”.

6.3.8 Gain Setup (Administrators)

When the analyzer reports the HGB blank voltage abnormal error, and you cannot remove the error by pressing the “Remove Error” button, adjust the HGB gains to correct the HGB blank voltage.

1. Tap “**Menu > Setup > Gain Setup > WB**” to enter the “**Gain Setup**” screen.
2. Adjust the HGB default gain in the “**HGB**” “**Set**” text box, until the HGB blank voltage is in the range of [4.30, 4.50].

NOTE:

When you modify the HGB default gain, the HGB blank voltage will change accordingly.

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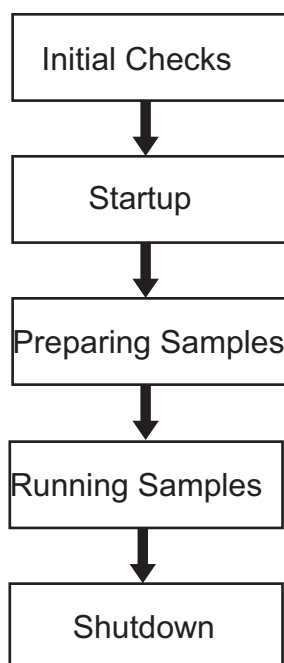
7 Operating Your Analyzer

7.1 Overview

This chapter provides step-by-step procedures for operating your analyzer on a daily basis.

7.1.1 Daily Operating Process

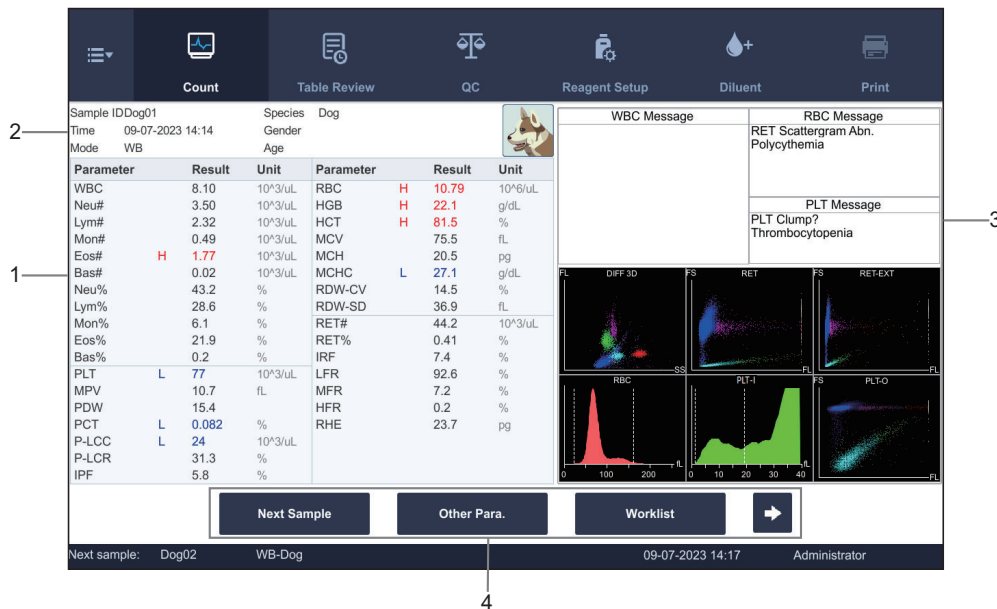
A flow chart indicating the common daily operating process is presented below.



7.1.2 Introduction to the Software Screen

Introduction to the count screen

Figure 7-1 Count screen



Item	Area	Description
1	Report parameter result area	The area displays the sample report parameter results.
2	Sample information area	The area displays sample information. When sample analysis or QC analysis finishes, the analyzer displays parameter results for the current sample. Operators can tap the left or right side of this area to view or close the graphical reference range for the current sample.
3	Flags and graphs area	- View the abnormal blood cell differential or morphology flags for current sample. - View the scattergrams and histograms for current samples.
4	Button area	When sample analysis is completed, tap the “Other parameters” button to review the RUO parameters results of current sample, or review or edit microscopic parameter results (only for blood sample analysis).

7.2 Preparations before Operation

⚠ CAUTION

Check if the reagent tubes are properly connected before using the system. Otherwise, the results may be inaccurate.

NOTE:

- Before using the analyzer, check and ensure that the analyzer is in normal operation status, that is, the indicator on the analyzer is in steady green; and no temperature alarm, liquid level alarm, or any other alarm is reported.
 - When the ambient temperature is out of the specified operating range, the analyzer will alarm you for abnormal ambient temperature and the analysis results may be unreliable. Go to see “13 Troubleshooting”.
-

Perform the following checks before turning on the analyzer.

- Checking the waste container
Check and make sure the waste container is not full before startup.
- Checking the reagents
 - Check whether any reagent has expired and frozen. The reagent needs to be kept still for 24 hours after long-distance transportation.
 - Check whether there are enough reagents for the test of the day. If the reagents run out during analysis, the analyzer will pause working automatically and prompt the operator to replace the reagents. Follow the instruction to replace the reagents. Otherwise you cannot continue the analysis.
For the safety precautions of reagents, see “1.2.3 Safety Messages Related to Reagents, Controls, and Calibrators”; for the use of reagents, controls, and calibrators, refer to the corresponding IFU; for how to connect and replace reagents, see “5.2.1 Connecting the Reagents”, see “12.3.3 Replacing the Reagents”.
- Checking for fluidic tubes and powers
 - Check and make sure the reagent and waste tubes are properly connected and not bent.
 - Check and make sure the power cord of the analyzer is properly plugged into the power outlet. For the power requirements, see “5.1.2 Power Requirements”.
- Checking the printer (optional)
Check and make sure the printer is properly installed, and there is enough paper. Check whether the printer power cord is inserted into the power socket and whether the printer cable is connected properly.
- Checking the keyboard, mouse, and external computer (optional)
 - Check whether the network wire of the external computer is properly connected to the main unit.
 - Check whether the keyboard and the mouse cable are properly connected to the external computer.

7.3 Startup and Login

7.3.1 Starting up the Analyzer

** WARNING**

Before turning on the instrument, make sure the input voltage meets the requirements.

CAUTION

Please check the firmness of all the doors and covers before running the system, and make sure they will not open or get loose during analysis. Exercise caution when open/close, install/uninstall the doors and covers to avoid dropping to the ground.

Perform the following procedure:

1. Change the power switch at the backside to ON position (“I”) to power on the analyzer.
2. The analyzer indicator lights up.
3. The analyzer performs self-test procedure and initialization.

NOTE:

- With the analyzer powers on, you can press [Standby] button on the right side of the analyzer to start the analyzer when the analyzer is shutdown.
- Time needed for initializing the fluidic systems depends on how the analyzer was previously shut down. Generally the startup process takes about 10 minutes.
- Users with different accounts have different access to software functions.
- If a fault occurs during initialization (for example, the background test result exceeds the acceptable range of background/blank count results, the analyzer will send an alarm. For the troubleshooting method, see “13 Troubleshooting”.
- Background test refers to test on particle and electrical interference.
- If the first background test result obtained during the fluidic initialization exceeds the background range, the analyzer will automatically perform background check again.
- The sample ID of the background test is “0”.
- The analyzer does not flag background test result with H/L or suspect flag.
- For the background range of each parameter, see “B.3.2 Background/Blank Count Requirements”.

The indicator status of the analyzer works as follows:

Indicator status	Meaning
Stay in green	Ready
Flicker in green	Running
Flicker fast	Sample probe piercing
Stay in red	Error
Stay in orange	Standby
Off	Analyzer shutdown

7.3.2 Login

Perform the following procedure:

1. Start the analyzer, and the login screen displays.
2. Enter account and password.
3. Tap  to enter the main screen

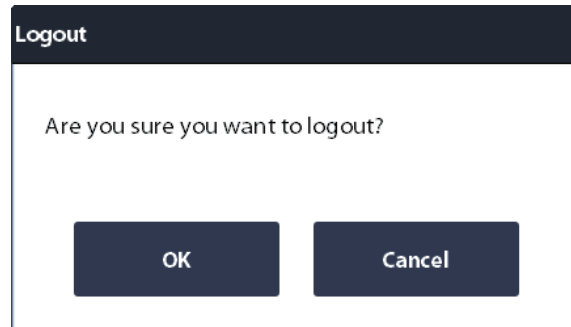
If the current user logs in as an administrator's account, the lower right corner of the screen displays “Administrator”

7.3.3 Switching Login Account

Perform the following procedure:

1. Tap “Menu > Logout” in turn.

A dialog box displays



2. Tap “OK”.
3. Enter the new user ID and password, and tap  to log in.

NOTE:

To set an account or change the password, see “6.3.2 User Management”.

7.4 Preparing Samples

BIOLOGICAL RISK

- All the samples, controls, calibrators, wastes and areas contacted them are potentially biohazardous. Wear proper personal protective equipment (e.g. gloves, lab coat, goggles, etc.) and follow safety procedures in the laboratory when handling them and the contacted areas in the laboratory.
- Do not touch blood samples directly.

CAUTION

- Be sure to use the Mindray Animal Medical-specified disposable products like blood collection tubes. Do not reuse disposal products, otherwise the result may be inaccurate.
- To attain accurate analysis results, make sure the sample volume meets requirements. Otherwise, the results may be inaccurate.
- The samples stored under refrigeration condition (2°C to 8°C) must be kept at room temperature for at least 15 minutes before analysis.
- Be sure to mix any sample that has been prepared for a while before running it.
- Misleading results may occur if the sample has floccules, clots. Follow your laboratory protocol to deal with such samples.

7.4.1 Preparing Whole Blood Samples

To attain accurate analysis results, make sure the venous blood sample volume meets the following requirements:

Test mode	Sample volume
Whole blood (WB)	$\geq 150 \mu\text{L}$

Perform the following procedure:

1. Use evacuated blood collection tubes to collect venous blood samples.
2. Well mix the blood sample and EDTA K₂/EDTA K₃ anticoagulant in the test tube rapidly.

7.4.2 Preparing Prediluted Samples

NOTE:

- Predilute mode is only applicable to blood samples of rat and mouse.
- Be sure to run the prediluted samples within 30 minutes after the dilution; otherwise the results may be unreliable.
- Be sure to mix any sample that has been prepared for a while before running it.

Perform the following procedure:

1. Tap “**Diluent**” utility button to dispense diluent.
The analyzer prepares for dispensing diluent. When the preparation completes, a dialog box displays.
2. Present a tube under the sample probe.
3. Tap the [Aspirate] key on the analyzer to dispense the diluent.
The analyzer dispenses 100 μL of diluent at once.
4. If operators needs to continue to dispense diluent, repeat step 3.
5. After diluent dispensing is completed, remove the tube and tap “**Cancel**”.
6. Add 20 μL of blood samples into the tube with diluent, shake the tube to mix the sample.

7.4.3 Preparing Body Fluid Samples

⚠ CAUTION

- To ensure sample stability, process serous cavity fluid (pleural fluid and ascitic fluid) and synovial fluid samples and synovial fluid samples with EDTA anticoagulant.
- Do not process cerebrospinal fluid samples with anticoagulant.

NOTE:

To attain accurate analysis result, run body fluid samples as soon as possible after collection.

The subtype of body fluid supported by the analyzer include cerebrospinal fluid, serous cavity fluid (pleural fluid and ascitic fluid) and synovial fluid.

Perform the following procedure:

1. Use clean collection tube or syringe to collect body fluid samples.
2. Mix the sample according to your laboratory's protocol.

7.5 Sample Analysis

7.5.1 Setting up Sample Information

Operators can set sample information by one of the following ways:

- Set up sample information on the main unit of the analyzer
- Obtain sample information by worklist

Setting up sample on the main unit of the analyzer

1. On the “**Count**” screen, tap “**Next Sample**” to enter the “**Next Sample**” screen.
2. Manually enter the sample ID or use an external barcode scanner to scan the barcode label on the tube to enter the sample ID.

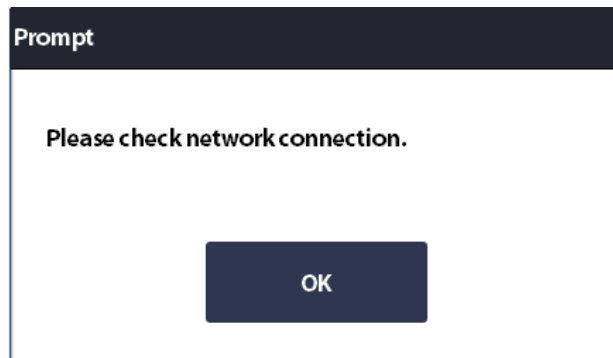
NOTE:

- If you have set “**Entry of next sample ID**” to “**Auto Increase**”, you only need to enter the sample ID for the first sample. The subsequent sample ID will automatically increase by 1 based on the previous one.
 - If you have set “**Entry of next sample ID**” to “**Manual entry**”, you need to enter the sample ID for each sample.
 - A maximum of 20 characters are allowed for a sample ID (including prefix); the ID must end with a number, and must not be consisted of “0” only.
 - For more information about the sample ID entry method, see “6.3.4 Auxiliary Setup”.
3. Select species, test mode, and enter other sample information.
 4. Ensure the sample ID and sample information, and tap “**OK**”.

Obtain sample information by worklist

When the analyzer is connected to the vetXpert software, operators may obtain sample information from the vetXpert software by worklist. The worklist button is displayed both on the “**Count**” screen and on the “**Next Sample**” screen.

1. Connect the analyzer to the vetXpert software, and then set up worklist in the vetXpert software. For detailed information, see Operator's manual of the vetXpert software.
2. On the “**Count**” screen of the analyzer, tap “**Worklist**” to enter the “**Worklist**” screen.
 - If the analyzer is not connected to the vetXpert software, you will be prompted to check the network connection first.



- If the analyzer is properly connected with the vetXpert software, it automatically obtains sample information from the vetXpert software.

NOTE:

You can select or clear “**Worklist Auto Refresh**” to activate or deactivate the automatic refresh function.

3. Select the sample to be analyzed, and tap “**OK**”.

The “**Next Sample**” dialog box displays the detailed information of the selected sample.

4. Check the information, and tap “**OK**”.

The “**Next Sample**” dialog box closes, and the analyzer turns to the “**Count**” screen which displays the sample information.

7.5.2 Performing Sample Analysis

CAUTION

- **When the power indicator is flickering, it indicates that the sample probe is lowering down. Be sure your hand is away from the sample probe during the process, otherwise, your hand may be hurt.**
 - **During aspirating, the sample probe should touch the bottom of the container. Otherwise, the accuracy of aspirating volume will be affected.**
-

NOTE:

- Predilute mode is only applicable to blood samples of rat and mouse.
 - If sample information is obtained from the vetXpert software by worklist, analysis results will be automatically transmitted to the vetXpert software when the analyzer finishes sample analysis.
 - If the analyzer detects clogging or bubbles during the analysis, the corresponding error message will be displayed in the error message area and the results of all related parameters will be invalidated. Go to see “13 Troubleshooting” for solutions.
 - When the ambient temperature is out of the specified operating range, the analyzer will alarm you for abnormal ambient temperature and the analysis results may be unreliable. Go to see “13 Troubleshooting” for solutions.
-

Check the following before analysis:

- Sample is prepared in accordance with the laboratory protocol (see “7.4.1 Preparing Whole Blood Samples”, “7.4.2 Preparing Prediluted Samples” and “7.4.3 Preparing Body Fluid Samples”).
- Analysis orders are set (see “7.5.1 Setting up Sample Information”).
- The entered sample ID, species, and test mode are strictly in accordance with the sample to be run.
- The analyzer is ready to run samples (i.e. the analyzer indicator stays in green). The sample probe lowers to aspiration position.

Performing whole blood sample analysis

Follow bellow instructions:

1. Present the sample tube under the sample probe.
2. Press the [Aspirate] key on the analyzer to start sample analysis.
The sample probe automatically aspirates sample.
3. Remove the sample tube.
 - The analyzer automatically analyzes the sample, and the analyzer indicator is flickering in green.
 - When the analysis completes, the analyzer indicator returns to “Ready” status (stay in green).
 - The screen displays the current sample results, histograms, scattergrams and flags (if there is).

Performing prediluted sample analysis

Follow bellow instructions:

1. Present the sample tube under the sample probe.
2. Press the [Aspirate] key on the analyzer to start sample analysis.
The sample probe automatically aspirates sample.
3. Remove the sample tube.
 - The analyzer automatically analyzes the sample, and the analyzer indicator is flickering in green.
 - When the analysis completes, the analyzer indicator returns to “Ready” status (stay in green).
 - The screen displays the current sample results, histograms, scattergrams and flags (if there is).

Performing a single body fluid sample analysis

NOTE:

Body fluid sample analysis only applies to LabH 66 and LabH 68.

Follow bellow instructions:

1. Present the sample tube under the sample probe.
2. Press the [Aspirate] key on the analyzer to start sample analysis.

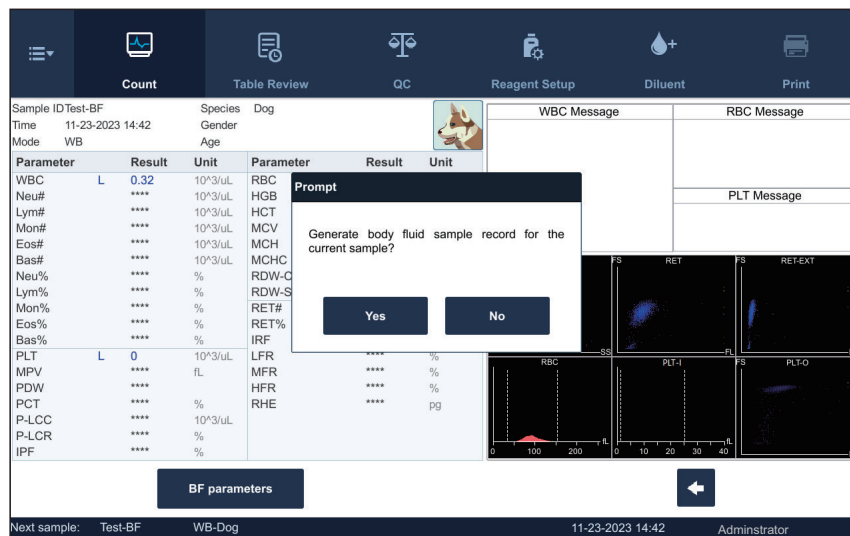
The sample probe automatically aspirates sample.

3. Remove the sample tube.

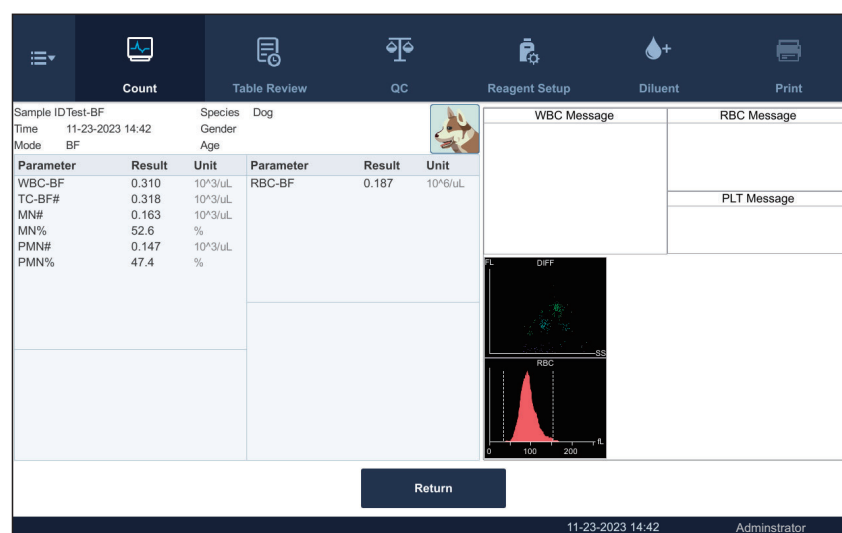
- The analyzer automatically analyzes the sample, and the analyzer indicator is flickering in green.
- When the analysis completes, the analyzer indicator returns to “Ready” status (stay in green).

4. When sample analysis finishes, tap and then tap “BF parameters”.

A dialog box pops up.



5. Tap “Yes” in the dialog box to enter the test result screen of the body fluid sample.



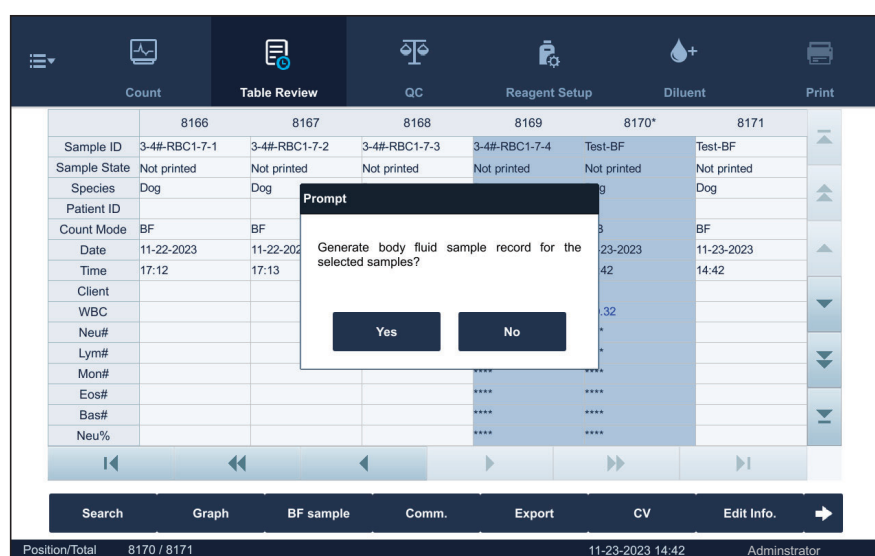
6. Tap “Return” to return to the main screen.

Performing multiple body fluid sample analyses

If the operator needs to perform multiple body fluid sample analysis, the operator can follow instructions in “Performing a single body fluid sample analysis” to perform sample analysis one by one. Or the operator can follow instructions below to perform multiple body fluid sample analyses.

1. Present the sample tube under the sample probe.

2. Press the [Aspirate] key on the analyzer to start sample analysis.
The sample probe automatically aspirates sample.
3. Remove the sample tube.
 - The analyzer automatically analyzes the sample, and the analyzer indicator is flickering in green.
 - When the analysis completes, the analyzer indicator returns to “Ready” status (stay in green).
4. Repeat step 1. to step 3. to finish analyses for all body fluid samples.
5. Tap “**Menu > Table Review**”, or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
6. Select one body fluid sample or multiple body fluid samples, and tap “**BF sample**”
A dialog box pops up.



7. Tap “**Yes**” in the dialog box, the analyze generates analysis results for the selected body fluid samples.
8. Select the desired sample, and tap “**Graph**” to view analysis results.
For detailed information, see “8.2.3 Graph Review”.

7.6 Entering/Exiting Standby Status

When the analyzer is free from fluidic operations or when it reaches the set standby time, the analyzer automatically enters the standby status.

When the user starts sample tests, or performs any operation that initiates fluidic system actions or moving parts actions, the analyzer automatically exits standby.

NOTE:

See “6.3.6 Maintenance (Administrators)” for how to edit waiting time before entering the standby mode.

7.7 Shutting down the Analyzer

CAUTION

- **Be sure to shut down the analyzer strictly as instructed. Otherwise, the tubes may be polluted, leading to wrong results.**
 - **Do not start up the analyzer immediately after shutdown. Wait at least 10 seconds.**
-

Perform the following procedure:

1. On the “**Count**” screen, tap “**Menu > Shutdown**”.
2. Tap “**OK**” to perform the shutdown procedure. The dialog box disappears automatically.
3. When a dialog box pops up, asking you to perform Probe Cleanser maintenance, present Probe Cleanser to the sample probe as instructed, and start Probe Cleanser maintenance.

NOTE:

- When the instrument triggers the Probe Cleanser maintenance strategies, a Probe Cleanser maintenance dialog box will pop up when the instrument is shut down. The Probe Cleanser maintenance strategies include: Not perform probe maintenance (for 7 days by default) and accumulative analyzed samples greater than the threshold (500 by default). For modifying Probe Cleanser maintenance strategies, contact our Customer Service Department.
 - For how to perform probe cleanser maintenance, see “6.3.6 Maintenance (Administrators)”.
4. After Probe Cleanser maintenance is completed, the touch screen will black out and message will be displayed instructing you to power off the analyzer. Operate accordingly.
 5. Check if the waste container is full. If yes, empty the waste container and dispose of the waste properly.

8 Reviewing Sample Results

8.1 Introduction

After every analysis cycle, the analyzer automatically saves the analysis results into the sample database.

Up to 40,000 analysis results can be stored in this analyzer. When the maximum number has been reached, the newest result will overwrite the oldest. You can review all the analysis results, scattergrams and histograms.

You can review all the analysis results, flags, scattergrams, and histograms.

8.2 Reviewing Sample Results

NOTE:

The screenshots in this Operator's Manual are only for reference. The actual screens are subject to the configuration of your analyzer.

Tap “**Menu > Table Review**”, or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.

The sample results are sequentially displayed from left to right on the “**Table Review**” screen, the latest on the utmost right of the table, including the sample information, parameter results, and animal information.

8.2.1 Operations on the Table Review Screen

Browsing sample record

Tap  / ,  / , and  /  to turn to the left/right column (page).

Tap  / ,  / , and  /  to turn to the previous/next row (page).

Figure 8-1 Table review - parameter result

Table Review

	2430	2431	2432	2433	2434	2435*
Sample ID	5-1#-TYXX-R2-7-4	Dolphin1001	Dolphin1002	0	0	Dog01
Sample State	Not printed	Not printed	Not printed	Not printed	Not printed	Not printed
Species	Dog	Dog	Dog			Dog
Patient ID						
Count Mode	WB	WB	WB	WB	WB	WB
Date	09-05-2023	09-05-2023	09-05-2023	09-06-2023	09-06-2023	09-07-2023
Time	20:07	20:26	20:28	19:11	19:52	14:14
Client						
WBC	L 0.00	11.70	7.97	0.00	0.00	8.10
Neu#	****	10.60	6.18	****	****	3.50
Lym#	****	0.75	1.39	****	****	2.32
Mon#	****	0.33	0.37	****	****	0.49
Eos#	****	L 0.01	L 0.02	****	****	H 1.77
Bas#	****	0.01	0.01	****	****	0.02
Neu%	****	90.6	77.6	****	****	43.2

Search

Graph

BF sample

Comm.

Export

CV

Position/Total2435 / 243509-07-2023 14:18Administrator

Figure 8-2 Table review - animal information

Table Review

	2430	2431	2432	2433	2434	2435*
Sample ID	5-1#-TYXX-R2-7-4	Dolphin1001	Dolphin1002	0	0	Dog01
Sample State	Not printed	Not printed	Not printed	Not printed	Not printed	Not printed
Species	Dog	Dog	Dog			Dog
Patient ID						
Gender						
Age						
Ref. group	Dog Default	Dog Default	Dog Default			Dog Default
Draw Date						
Draw Time						
Delivery Date						
Delivery Time						
Veterinarian						
Operator	rd	rd	rd	User	User	Administrator
Validated By						
Comments						

Search

Graph

BF sample

Comm.

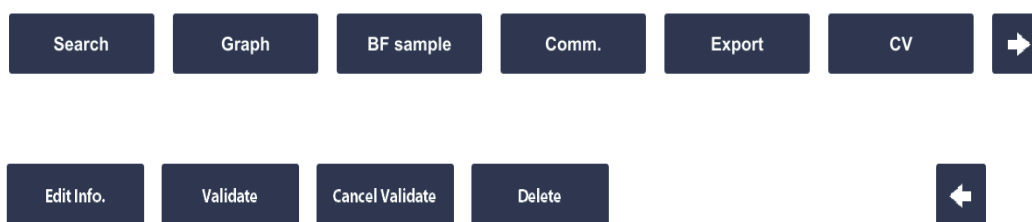
Export

CV

Position/Total2435 / 243509-07-2023 14:18Administrator

Tap  /  to switch to the second tool bar.

Figure 8-3 Tool bar



The position of the current sample result and the total sample results are shown in the form of “**Position/Total**” at the bottom left the screen.

Selecting/deselecting records

- Tap the record that you want to select to select it.
- Tap a selected record to deselect it.
- Tap the records that you want to select one by one to select multiple records.
The selected sample records are highlighted.

8.2.2 Searching for Sample Records

You can search sample records that match defined conditions.

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap “**Search**” on the tool bar.

The following dialog box displays.

3. Define the searching conditions.

Search today's samples by sample status, see below for setting descriptions:

Item	Description
Not Validated Today	Tap "Not Validated Today" , "Not Printed Today" , or "Not Transmitted Today" to search for the samples on the current day that are not validated, printed or transmitted.
Not Printed Today	
Not Transmitted Today	

4. Search for sample records that match defined conditions.

You can define one or more searching conditions. When you have defined more than one searching condition, the analyzer will search for the sample records that match all defined conditions.

Item	Description	
Sample ID	Enter "Sample ID" as a search condition, the analyzer searches for and displays all sample records whose sample ID includes the entered sample ID.	For example, if you enter "1235" into the "Sample ID" field, the analyzer will search for all sample records whose sample ID includes "1235".
Patient ID	Enter "Patient ID" as a search condition, the analyzer searches for and displays all sample records whose patient ID includes the entered sample ID.	For example, if you enter "1235" into the "Patient ID" field, the analyzer will search for all sample records whose patient ID includes "1235".
Patient	Enter "Patient" as a search condition. The analyzer will search for all sample records whose patient name matches the defined patient.	/
Species	Enter "Species" as a search condition. The analyzer will search for all sample records whose species matches the defined species.	/
Date	Define the test time period in the "Date" fields as a search condition. The analyzer searches for all sample records tested between the defined time period of "Date" .	The "Date" range is set to the current date by default.
Sample No.	Enter "Sample No." as search condition, the analyzer searches for and displays all sample records whose sample ID includes the entered sample ID.	/
Sample State	Check "Not validated" , "Not printed" , or "Not transmitted" , and the analyzer searches from all sample records that match the checked state.	You can check for more than one sample state, and the analyzer searches from all sample records that match the checked states.
Auto select searched record	When "Auto select searched record" is checked, the analyzer highlights and displays all searched results.	/

5. Tap **"OK"**.

All searched results display on the screen.

6. (Optional) Tap “**Cancel**” to return to the “**Table Review**” screen.

8.2.3 Graph Review

Perform the following procedure:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Select one or more sample records of which you want to review the graph data.
The selected sample record is highlighted.
3. Tap “**Graph**” to go to the “**Graph**” screen.

See below for relevant operations on the “**Graph**” screen:

Previous/Next

Tap “**Previous**” or “**Next**” to browse the previous or next samples.

Reviewing

Tap “**Table Review**” to enter the “**Table Review**” screen.

Other parameters (Applicable to LabH 63/LabH 65/LabH 66/LabH 68)

The “**Other Para.**” screen displays the RUO parameter results and microscopic parameter results. 130,000

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Select one or more sample records of which you want to review the RUO parameter results and microscopic parameter results.

The selected sample record is highlighted.

- Tap “**Graph**” to enter the “**Graph**” screen.
- Tap “**Other Para.**” to enter the “**Other Para.**” screen.

Item	Description
Research Use Only (RUO) Parameters	Tap the “ RUO Para. ” tab to review the RUO parameter results. NOTE: RUO parameters are for research purpose only and they cannot be used for diagnosis purpose.

Item	Description
Microscopic parameters	Before you can review microscopic parameter results, make sure you have set the microscopic parameters on the “Setup > Para. Setup > Microscop. Para. Setup” screen. 1. Tap the “Microscopic Para.” tab to review the “Microscopic Para.” results or tap the “Result” cell for a certain parameter to enter the microscopic parameter result. 2. (Optional) If necessary, tap the “Print” button on the “Microscopic Para.” screen to print the microscopic parameter results. NOTE: • For the method of defining microscopic parameters, see “6.3.5 Para. Setup (Administrators)”. • You cannot edit the microscopic parameter results of a validated sample. For the method of validating samples, see “8.2.8 Validating/Canceling Validation (Administrators)”.

Edit Results (Administrators)

Administrators may edit analysis results. Perform the following procedure:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select the sample record of which you want to edit the analysis results.
The selected sample record is highlighted.
3. Tap “**Graph**” to enter the enter the graph review screen.
4. Tap  to enter the second tool bar screen and then tap “**Edit Result**”.
The screen displays the “**Edit Result**” dialog box.
5. Tap the result edit box of the parameter you want to edit and modify the parameter result.
6. Tap “**OK**” to close the dialog box.
 - The analyzer saves the new parameter results.
 - The edited parameter result will be flagged with an “E”. If any parameter result is changed due to the manual change of a parameter result, it will be flagged with an “e”.

NOTE:

You cannot edit the sample results of the samples that have been validated.

Perform the following procedure to restore the edited results to original analysis results:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select the sample record of which you want to edit the analysis results.
The selected sample record is highlighted.
3. Tap “**Graph**” to enter the enter the graph review screen.
4. Tap  to enter the second tool bar screen and then tap “**Edit Result**”.
The screen displays the “**Edit Result**” dialog box.
5. Tap “**Restore**”.

- The edited results will be changed back into the initial values.
- The “E” and “e” flags disappear.

Reviewing special information

Perform the following procedure:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select the samples of which you want to review the special information.
The selected sample record is highlighted.
3. Tap “**Graph**” to enter the “**Graph**” screen.
4. Tap “**Special Info.**”.
The screen displays the instrument-related information when analyzing the current sample.
5. (Optional) Tap the “**Error Information**” pull-down list to review the error logs (if there are) when analyzing the current sample.

Reviewing traceability information

The “**Traceability**” screen displays the information of the reagents and controls when analyzing the current sample.

Perform the following procedure:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select the samples of which you want to review the traceability information.
The selected sample record is highlighted.
3. Tap “**Graph**” to enter the “**Graph**” screen.
4. Tap “**Traceability**”.
The “**Traceability**” screen displays the information of the reagents and controls when analyzing the current sample.

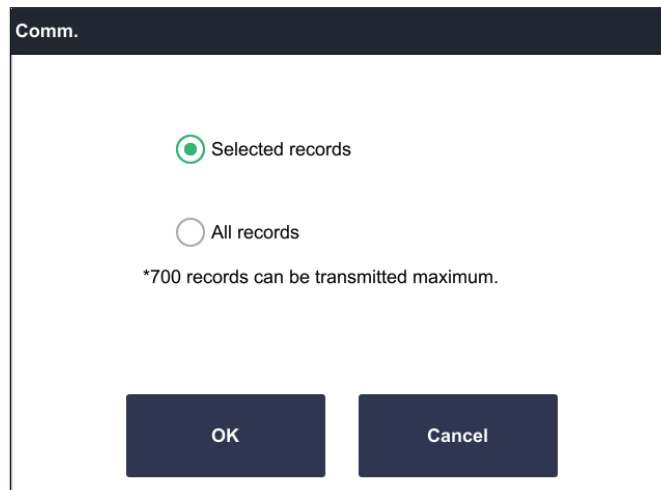
8.2.4 Communication

Before transmitting the sample records, make sure the network connection is good.

Transmitting selected records

Perform the following procedure:

1. Select samples to be transmitted on the “**Table Review**” screen.
2. Tap “**Comm.**”, the following dialog box displays.

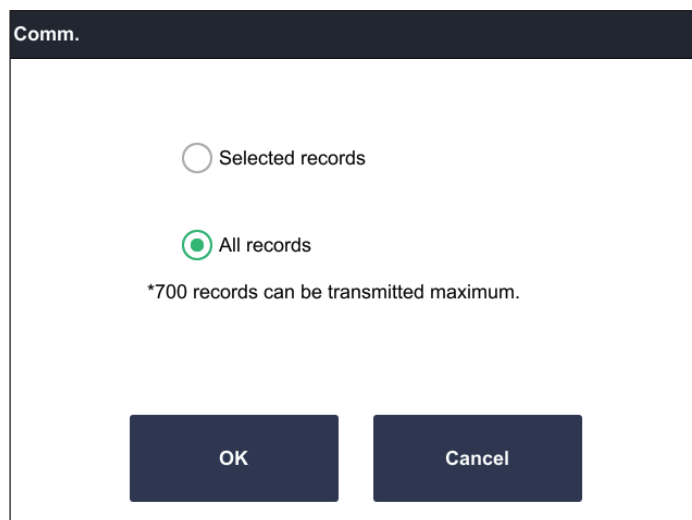


3. Select the “**Selected records**” radio button.
4. Tap “**OK**” to start communication.

Transmitting all records

Perform the following procedure:

1. Tap “**Comm.**”, the following dialog box displays.



2. Select the “**All records**” radio button.
3. Tap “**OK**” to close the dialog box and start transmitting data.

8.2.5 Exporting Sample Results

Users of administrator level can export the sample records, graphic data, flags, and other parameters of the selected sample records to a USB flash drive.

Before exporting sample records, make sure that you have inserted a safe USB flash drive into the USB port on the analyzer.

CAUTION

- The USB port of the analyzer is only used to connect to a designated peripheral device. For details about supported devices and models, see “B.4 Input/Output Devices.”
 - The user should ensure the data safety of the USB devices connecting to the analyzer.
-

Exporting selected or all sample records

Perform the following procedure:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select one or more samples records that you want to export; to export all the sample records, go to the next step.
3. Tap “**Export**”.

The “**Export**” dialog box displays.

4. To export some sample records, tap “**Selected records**” in the “**Export Range**” area; to export all the sample records, tap “**All records**” in the “**Export Range**” area.
5. Tap “**OK**”.

The analyzer exports the corresponding sample records to the USB device.

8.2.6 Calculating CV Values

Follow bellow instructions to calculate the CV values of sample results:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select multiple sample records for which you want to calculate the CV values.
3. Tap “**CV**”.

The screen displays the Mean value, SD value and the CV value for each parameter.

NOTE:

To calculate CV values, select at least 3 samples.

8.2.7 Editing Information

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Tap to select the sample record of which you want to edit the sample information.
The selected sample record is highlighted.
3. Edit the sample information.
 - a. Tap “**Edit Info.**”.

The following dialog box displays.

b. Enter necessary information as needed.

4. Tap “OK” to save the entered information.

NOTE:

For the setup of reference groups, see “6.3.5 Para. Setup (Administrators)”.

8.2.8 Validating/Canceling Validation (Administrators)

NOTE:

You cannot validate background test results or invalid sample records.

Users of administrator level can validate/cancel validate sample records.

1. Tap “Menu > Table Review” or tap the “Table Review” utility button to enter the “Table Review” screen.
2. Tap to select the sample you want to validate or cancel validation.
The selected sample record(s) is/are highlighted.
3. Tap “Validate” or “Cancel Validate”.
 - For the validated sample records, the “Validated By” cell displays the role of the validator.
 - The “Validated By” cell for the unvalidated sample records will be empty.

8.2.9 Deleting Sample Records

Administrators can delete sample records on the “**Table Review**” screen.

Deleting selected or all sample records

Perform the following procedure:

1. Select “**Menu > Table Review**” or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. To delete some sample records, tap to select one or more samples to delete; to delete all the sample records, go to the next step.

The selected record(s) is/are highlighted.

3. Tap “**Delete**”.

The “**Delete**” dialog box is displayed.

4. To delete selected sample records, select “**Selected records**”. To delete all sample records, select “**All records**”.

5. Tap “**OK**”.

The system deletes the corresponding records.

8.3 Flags of Analysis Results

The analyzer provides two types of flags for analysis results:

- Parameter flags
- Flags of abnormal blood cell differential or morphology

8.3.1 Parameter Flags

The analyzer provides the following parameter flags:

Flag	Message	Meaning
• “H” (default) and “L” • “h” and “l” • “↑” and “↓”	High and low result flags	The analysis result exceeds the upper or lower limit of the reference range, but still within the display range
“R” (default) or “r”	Suspect flags	The analysis result is suspicious
“++++”	Out of display range flag	The analysis result is out of the display range
“*****”	Screened results	When the system decides a parameter result is not reliable (for example, the DIFF parameter results of certain abnormal samples), the Sample Report screen will not display the results in values, but as “*****”.

NOTE:

The results of background check will not be flagged for abnormal parameters, abnormal blood cell differential or morphology.

8.3.2 Flags of Abnormal Blood Cell Differential or Morphology Results

CAUTION

Abnormal cells may not necessarily trigger the flags during the analysis process, it is recommended that reexamination is conducted per the operation instruction of your laboratory.

The analyzer reports the flags for the following abnormal blood cell differential or morphology.

Table 8-1 Trigger condition of parameter alarms

Message	Criteria
Leukocytopenia	- WBC < $3 \times 10^9/L$ (for dog, cat, and horse) - WBC # below lower normal range limit 40% (for another animals other than dog, cat, and horse)
Leucocytosis	WBC # >20% above upper normal range limit
Neutropenia	Neutrophil # <20% below lower normal range limit
Neutrophilia	Neutrophil # >20% above upper normal range limit
Lymphopenia	Lymphocyte # <25% below lower normal range limit
Lymphocytosis	Lymphocyte # >25% above upper normal range limit
Monocytosis	Monocyte # > 40% above upper normal range limit
Eosinophilia	Eosinophil # > 40% above upper normal range limit
Basophilia	Basophil # > 100% above upper normal range limit
Anemia	HCT < 10% below lower normal range limit
Polycythemia	HCT > 10% above upper normal range limit
Microcytosis	MCV < 10% below lower normal range limit
Macrocytosis	MCV > 10% above upper normal range limit
Low MCHC Alert	MCHC < 10% below lower normal range limit
High MCHC Alert	MCHC > 10% above upper normal range limit
Thrombocytopenia	PLT # < 25% below lower normal range limit
Thrombocytosis	PLT # > 50% above upper normal range limit

Table 8-2 Trigger condition of other alarms

Message	Indication	Criteria
Asp.Abn/ Abn.Sample	The sample probe is clogged or the sample volume is insufficient	Insufficient sample aspiration due to clogging of the sample probe, or insufficient sample volume
WBC Scattergram Abn	DIFF scattergram abnormal	The DIFF channel scattergram is abnormal
Atypical Lymph?	Possible presence of abnormal lymphocytes	Presence of excessive dots in abnormal lymphocyte sensitive region of the scattergram
Immature Gran?	Possible presence of immature granulocytes	Presence of excessive dots in immature granulocyte sensitive region of the scattergram
Band cell suspected?	Possible presence of Band Cell	Presence of excessive dots in Band Cell sensitive region of the scattergram
Lipid Particles?	Possible presence of lipid particles	Presence of excessive dots in lipid particle sensitive region of the scattergram
DIFF Analysis Abn..	The DIFF channel may be abnormal and the DIFF measurement may be inaccurate	Analyze and monitor the measurements of the DIFF channel
RBC Lyse Resistance?	Presence of abnormally distributed dots in WBC sensitive region of the DIFF scattergram	Abnormal dots are distributed in WBC sensitive regions on the DIFF scattergram
NRBC?	Possible presence of nucleated red blood cells	Presence of excessive dots in NRBC sensitive region of the scattergram
RBC Histogram Abn.	Abnormal distribution of RBC histogram	The distribution of RBC histogram is abnormal
RET Scattergram Abn.	Abnormal distribution of RET scattergram	The distribution of RET scattergram is abnormal
Dimorphic Population	Dimorphic population distribution	Presence of two or more peaks on the RBC histogram
Clog	The Impedance channel is abnormal	Aperture voltage abnormal
RBC Analysis Abn	The RBC channel may be abnormal and the RBC measurement may be inaccurate	Analyze and monitor the measurements of the RBC channel
HGB Analysis Abn	The HGB channel may be abnormal and the HGB measurement may be inaccurate	Analyze and monitor the measurements of the HGB channel

Table 8-2 Trigger condition of other alarms

Message	Indication	Criteria
RET Analysis Abn	The RET channel may be abnormal and the RET measurement may be inaccurate	Analyze and monitor the measurements of the RET channel
RBC Agglutination?	RBC results possibly inaccurate.	Calculate and compare special parameters
PLT Analysis Abn	The PLT channel may be abnormal and the PLT measurement may be inaccurate	Analyze and monitor the measurements of the PLT channel
PLT_O Analysis Abn	The PLT-O channel may be abnormal and the PLT-O measurement may be inaccurate	Analyze and monitor the measurements of the PLT-O channel
PLT Scattergram Abn.	Abnormal distribution of PLT scattergram	The distribution of PLT scattergram is abnormal
PLT Clump?	Possibility of PLT clump	Calculate and compare special parameters

9 Using the QC Program

9.1 Overview

Quality Control (QC) consists of strategies and procedures that measure the precision and stability of the analyzer. The results imply the reliability of the sample results.

QC involves measuring materials with known, stable characteristics at frequent intervals. Analysis of the results with statistical methods allows the inference that sample results are reliable. Mindray Animal Medical recommends you run the QC program with normal, low and high level controls.

A new lot of controls should be analyzed in parallel with the current lot prior to their expiration dates.

This may be accomplished by running the new lot of controls for five days using any empty QC files. The QC files calculate the mean, standard deviation and coefficient of variation for each selected parameter. The instrument-calculated means of these ten runs should be within the expected ranges published by the manufacturer.

9.2 Setting up QC Files (Administrators)

9.2.1 Setting up New QC Files

Before running a new lot of controls, you must set up a QC file for each lot of controls.

Perform the following procedure:

1. Tap “**Menu > QC > Setup > New**” to enter the new QC file screen.
2. Set up QC file information, including “**Lot No.**”, “**Level**”, “**Exp. Date**”, “**Mode**”, “**Type**”, “**In Use**” and other information. You shall enter the required QC file information using one of the following ways:
 - Reading the information provided by the manufacturer: Insert the USB device saving the QC files to the USB port on the analyzer. On the new QC file screen, tap “**Import File**” and follow the software instruction to import the QC file.

- Manually enter the necessary QC file information, see Table 9-1 for details about setting options.

Table 9-1 QC file

Items	Description	Note
Lot No.	Find the Lot No. of controls on the vial labels of the controls	• The lot No. shall not be empty and up to 16 digits can be entered. You can enter characters, numbers, letters and special characters. Chinese characters are not supported. • The lot No. cannot be null. • Enter the lot No. of the controls by one of the following ways: Manual entry, or using an external barcode scanner.
Level	Levels of controls • High • Normal • Low	/
Exp. Date	Expiration dates of the controls	The expiration date shall not be earlier than the current system date.
Mode	The sampling and sample modes in QC tests: • WB • PD	/
Type	The controls are classified into three types: • BC-6D • BC-RET • BR60	/
In Use	QC files in use or not: • In Use • Not in Use	• When you select “In Use” in the “In Use” pull down list, the QC results will be stored in the QC file. • You can check or uncheck to “In Use” option on the QC file table screen to activate or deactivate the QC files. • For files having the same “QC Sample ID”, only one of them can be “In Use”. • For files having the same QC type and level, only one of them can be “In Use”.

Table 9-1 QC file

Items	Description	Note
QC Sample ID	If you analyze control together with samples, you can set a unique ID for the control. The analyzer will recognize the sample as control when it reads the unique ID. After the analysis completes, the results will be saved into the QC file of the QC sample ID.	- You can enter letters, digits and all other characters on the keyboard (including special characters) for QC sample ID. Chinese and other languages are not supported (e.g. Japanese, Korean, etc.) - If you are using external barcode scanner to scan sample IDs, make sure the QC sample IDs set on the QC file screen are the same as that of the Lot No. labels on the control vials. - If you are manually entering sample IDs, make sure the QC sample IDs set on the QC file screen are the same as the sample IDs you entered on the “Next Sample” screen.
Communication ID	If you are using LIS, LIS identifies QC results by the communication ID set here.	/
Target	- The target values for the QC parameters. - Find the targets in the target sheet of the controls.	/
Limit	- The allowed deviation limit for each QC parameter. - Find the limits information in the target sheet of the controls.	- The limits are represented by SD or by CV. - Tap “Set Limits” and select to represent the deviations “By SD” or “By CV”.

3. Save the QC file.
 - a. Tap “**Return**” or other buttons on the screen.
A confirm dialog box displays.
 - b. Tap “**Yes**” to save the new QC file.

9.2.2 Editing QC files

NOTE:

You can only edit empty QC files and cannot edit the QC files that already have QC data.

Perform the following procedure:

1. Tap “**Menu > QC > Setup**” to enter the QC file setup screen.
2. Select the desired QC file to be edited.
The “*” mark displays next to the “**File No.**” of the selected QC file.
3. Tap “**Edit**” to enter the QC file editing screen.
4. Edit the QC file as necessary.

NOTE:

For the introduction of the QC file setup, see Table 9-1.

5. Save the QC file.
 - a. Tap **“Return”** or other buttons on the screen.
A confirm dialog box displays.
 - b. Tap **“Yes”** to save the new QC file.

9.2.3 Deleting QC files

Perform the following procedure:

1. Tap **“Menu > QC > Setup”** to enter the QC file setup screen.
2. Select the desired QC file to be deleted.
The **“*”** mark displays next to the **“File No.”** of the selected QC file.
3. Tap **“Delete”**.
4. Select **“Selected records”** or **“All records”** in the pop-up dialog box, and then tap **“OK”**.

9.3 Running QC Tests

CAUTION

- **When the power indicator is flickering, it indicates that the sample probe is lowering down. Be sure your hand is away from the sample probe during the process, otherwise, your hand may be hurt.**
 - **Make sure the volume of the control meets the requirements. Otherwise, QC result maybe inaccurate.**
-

NOTE:

- The expiration date of expired controls is displayed in red.
 - Controls placed for a while need to be remixed before analysis.
-

Check the following before running QC analysis:

- Make sure you have set up a suitable and correct QC file for the control to be run, and the QC file is **“In Use”**, see “9.2 Setting up QC Files (Administrators)”
- Make sure you have prepared the controls in accordance with your laboratory protocols, and the requirements in the Instruction for Use of the controls.
- The analyzer is ready to run samples (i.e. the analyzer indicator stays in green).
- Make sure the analysis system is without error.

You can select one of the two ways below to run controls:

- Run controls on the QC count screen.
- Put controls together with normal samples, and run the controls on the **“Count”** screen

9.3.1 Running Controls on the QC Count Screen

Perform the following procedure:

1. Tap **“Menu > QC > Count”** or directly tap the **“QC”** utility button to enter the QC count screen.

2. Select the “**File No.**” of the desired QC file from the “**File No.**” pull-down list.
3. Make sure the QC file information displayed on the screen is correct. Make sure the level of the control to be run is the same with the current QC file, and the control is not expired.
4. Prepare the control as instructed by instructions for use of the controls.

NOTE:

For instructions for reagents and controls, see “3.4.1 Reagents” and see “3.4.2 Controls and Calibrators”.

5. To run QC counts:
 - a. Place the prepared controls under the sample probe.
 - b. Press the [Aspirate] key on the analyzer front cover again to start QC analysis.

The sample probe automatically aspirates the control.

6. When you hear the beep, remove the control.

When analysis finishes, the QC results will be displayed in the current screen and be saved in the QC file automatically.

NOTE:

Up to 372 QC results can be saved in each QC file.

7. Do the above procedures to continue running QC analysis if necessary.

9.3.2 Running Controls on the Count Screen

After setting special “**QC Sample ID**” for a control under the QC setup screen, you can put the control together with normal samples, and run it on the “**Count**” screen.

Note when you set sample ID for the control:

- If you are using external barcode scanner to scan sample IDs, make sure the QC sample IDs set on the QC file screen are the same as that of the Lot No. labels on the control vials.
- If you are manually entering sample IDs, make sure the QC sample IDs set on the QC file screen are the same as the sample IDs you entered on the “**Mode**” screen.

Perform the following procedure:

1. On the “**Count**” screen, tap “**Next Sample**”.
2. On the “**Next Sample**” screen, manually enter or use a barcode scanner to scan the barcode label on the tube to enter the sample ID and sample information into the “**Sample Info.**” field.

NOTE:

Make sure the Sample ID you entered is the same with the QC sample ID you set in the QC file for the control.

3. Run the samples in accordance with the normal sample analysis procedure.

After the analysis, the QC results will be automatically saved to the corresponding QC file.

NOTE:

- For instructions about sample analysis, see “7.5 Sample Analysis”
- Up to 372 QC results can be saved in each QC file.

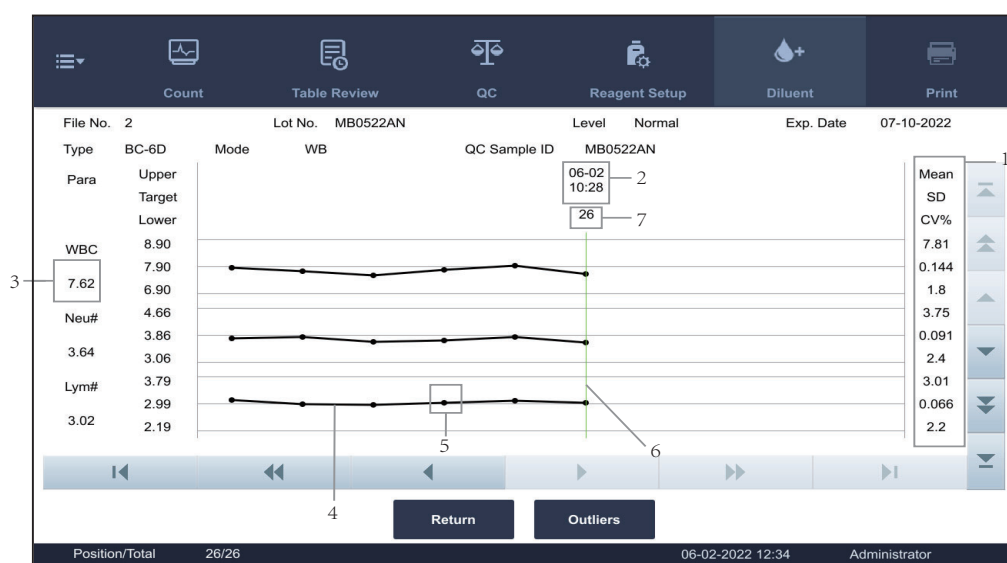
9.4 Reviewing QC Results

After QC analysis, you can review the QC results in the “QC Table” review or “QC Graph” review.

9.4.1 QC Graph Review

Perform the following procedure:

1. Tap “Menu > QC > Setup” to enter the QC file setup screen.
2. Select the desired QC file to review.
The “*” mark displays next to the “File No.” of the selected QC file.
3. Tap “QC Graph” to enter the QC graph review screen of the selected QC file.



1.	The Mean, SD and CV% of all the QC results of each parameter in the current graph.
2.	The saving date and time of the QC point on the green line.
3.	The line connecting all QC points of the same parameter to show the trend. The QC points in each graph are displayed from left to right according to the sequence from the earliest to the latest.
4.	The QC result of the QC point on the green line.
5.	Currently selected QC point. The analysis result of the selected QC point is displayed under the parameter. A black QC point indicates the value is within the limit; a red QC point indicates the value is out of the limit.
6.	The green vertical line is used to identify a selected QC point and all parameter values of the QC point.
7.	The sequence number of the QC point on the green line among all the QC points in the current QC file.

Entering the causes of outliers (administrators)

The QC point is out of value when its value is out of the limit. A red QC point indicates the value is out of the limit.

If necessary, perform the following procedure to enter the reasons for the outliers.

1. Tap “**Menu > QC > Setup**” to enter the QC setup screen.
2. Select the desired QC file to review.
The “*” mark displays next to the “File No.” of the selected QC file.
3. Tap “**QC Graph**” to enter the QC graph screen of the selected QC file.
4. Moving the green line to the desired QC point, and tap the “**Outliers**” button.

A dialog box displays the QC results, targets and limits of all the parameters.

	WBC	Neu#	Lym#	Mon#	Eos#
Target	7.90	3.86	2.99	0.46	0.51
Limit	1.00	0.80	0.80	0.38	0.50
Outliers	7.62	3.64	3.02	0.44	0.49

Cause of Outliers

☐ Control not well mixed
 ☐ Control deteriorated
 ☐ Control expired
☐ Reagent contaminated
 ☐ Reagent expired
☐ BR60

OK Cancel

5. Enter the reasons for outliers.
Check the suitable causes for outliers;
Or check “**BR60**” and enter the causes of outliers in the edit box.

NOTE:

You may enter up to 200 characters in “**BR60**” edit box.

6. Tap “**OK**” to save the reasons and exit the dialog box.

9.4.2 QC Table Review

Perform the following procedure:

1. Tap “**Menu > QC > Setup**” to enter the QC file setup screen.
2. Select the desired QC file to review.
The “*” mark displays next to the “**File No.**” of the selected QC file.

3. Tap “QC Table” to enter the QC Table screen of the specified QC file.

The screenshot shows the QC Table interface. At the top, there are fields for File No. (1), Lot No. (1), Level (Normal), and Exp. Date (01-01-2024). Below these are tabs for Type (BC-6D), Mode (WB), and QC Sample ID. The main table has columns: Date, Time, WBC, Neu#, Lym#, and Mon#. The first row shows Target values (1.00) and Limit values (1.00). The second row shows a QC result for 2* on 04-27-2022 at 16:51 with WBC 10.06, Neu# 1.00, Lym# 1.00, and Mon# 1.00. The third row shows a QC result for 1 on 04-27-2022 at 15:53 with WBC 9.99, Neu# 1.00, Lym# 1.00, and Mon# 1.00. Annotations: 1 points to the row number column, 2 points to the WBC column, and 3 points to the Neu# column.

	Date	Time	WBC	Neu#	Lym#	Mon#
Target	/	/	1.00			
Limit	/	/	1.00			
2*	04-27-2022	16:51	H 10.06	1.00	1.00	1.00
1	04-27-2022	15:53	H 9.99	1.00	1.00	1.00

1.	The sequence number of the QC results saved in the QC file (earliest to the latest from top to down).
2.	QC result.
3.	QC parameters (displayed in the same order as those on the QC graph screen).

9.4.3 Deleting QC Records (Administrators)

Administrators may deleted selected or all QC record in the QC file.

Delete selected QC record(s):

1. Tap “Menu > QC > Setup” to enter the QC file setup screen.
2. Select the desired QC file.
- The “*” mark displays next to the “File No.” of the selected QC file.
3. Tap the “QC Table” button to enter the QC table screen of the corresponding QC file.
4. Select the QC record(s) you want to delete.
- The selected QC records are highlighted.
5. Tap “Delete”.

The following dialog box displays.

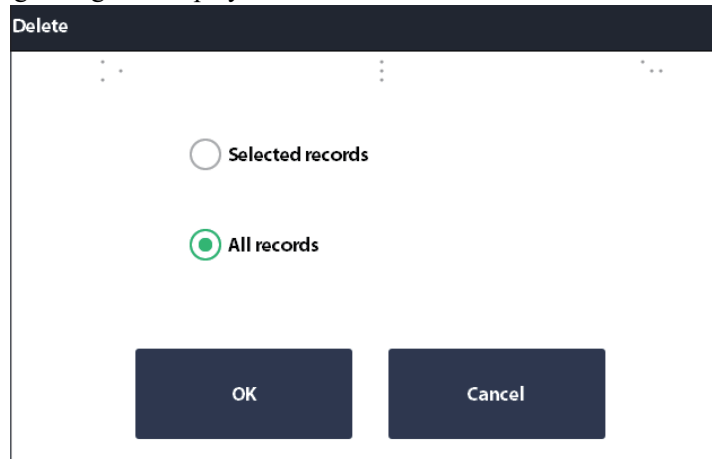
The dialog box titled "Delete" has two radio button options: "Selected records" (which is selected) and "All records". At the bottom are "OK" and "Cancel" buttons.

6. Tap to select “**Selected records**” and then tap “**OK**” to delete selected records.

Delete all QC records:

1. Tap “**Menu > QC > Setup**”.
2. Tap the “**QC Table**” button to enter the QC table screen of the corresponding QC file.
3. Tap “**Delete**”.

The following dialog box displays.



4. Tap to select “**All records**” and then tap “**OK**” to delete all records.

9.4.4 Communication

You can transmit QC data to the external data management software or LIS/HIS.

Before transmitting QC data, make sure the network is properly connected.

1. Tap “**Menu > QC > Setup**” to enter the QC file setup screen.
2. Select the desired QC file.

The “*” mark displays next to the “**File No.**” of the selected QC file.

3. Tap the “**QC Table**” button to enter the QC table screen of the corresponding QC file.
4. Tap “**Comm.**”.

Communication starts. All QC data of the selected QC files will be transmitted by default.

NOTE:

- The QC data saved in the process of transmission will not be transmitted.
- If auto-communication is enabled and a sample is run during the transmission of the QC data, then only when the QC data transmission finished will the auto-communication of the sample result start.

9.4.5 Exporting Data

Administrators may export selected or all QC records to an external USB device.

Before exporting data, make sure the USB device is firmly connected to the USB port on the side of the analyzer.

NOTE:

The user should ensure the data safety of the USB devices connecting to the analyzer.

Export selected records

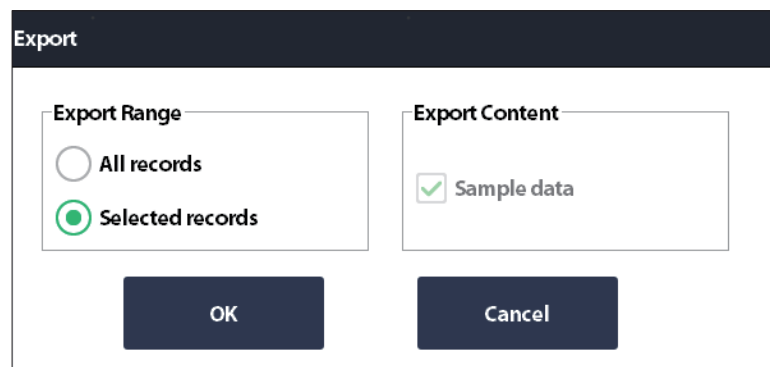
Perform the following procedure:

1. Tap “**Menu > QC > Setup**” to enter the QC file setup screen.
2. Select the desired QC file.
The “*” mark displays next to the “**File No.**” of the selected QC file.
3. Tap the “**QC Table**” button to enter the QC table screen of the corresponding QC file.
4. Select the QC record(s) you want to export.

The selected QC records are highlighted.

5. Tap “**Export**”.

The following dialog box displays.



The dialog box titled "Export" contains two sections. The "Export Range" section has two radio buttons: "All records" (unselected) and "Selected records" (selected). The "Export Content" section has a checked checkbox for "Sample data". At the bottom are "OK" and "Cancel" buttons.

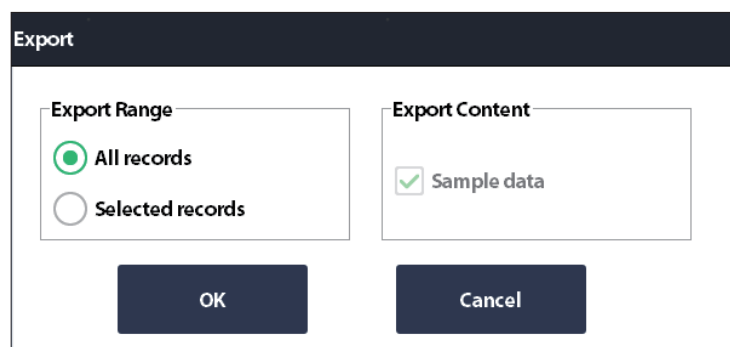
6. Tap to select “**Selected records**” and then tap “**OK**” to export the selected records.

Export all QC records

Perform the following procedure:

1. Tap “**Menu > QC > Setup**” to enter the QC file setup screen.
2. Tap the “**QC Table**” button to enter the QC table screen of the corresponding QC file.
3. Tap “**Export**”.

The following dialog box displays.



The dialog box titled "Export" contains two sections. The "Export Range" section has two radio buttons: "All records" (selected) and "Selected records" (unselected). The "Export Content" section has a checked checkbox for "Sample data". At the bottom are "OK" and "Cancel" buttons.

4. Tap to select “**All records**” and then tap “**OK**” to export all records from the QC Table.

9.5 When QC Results are Out of Range

If a QC result falls outside the control range, the “QC” button on the software screen lights in orange.

9.5.1 Troubleshooting

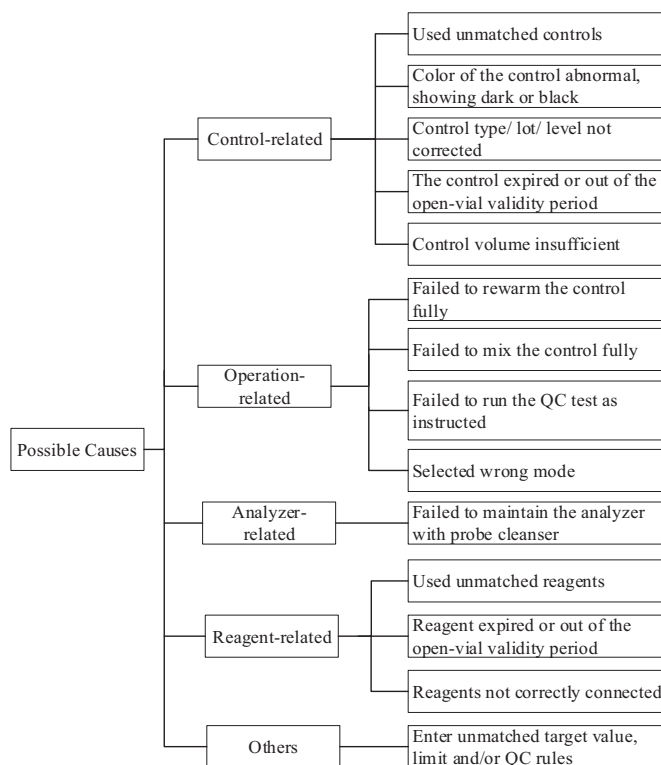
When a QC result falls outside the control range, perform the following procedure to solve the problem.

- Analyze the cause of outliers, take corrective measures, and verify effectiveness of the corrective measures.
- If the corrective measures fail, report it according to the laboratory protocol.
- Contact Customer Service Department.

9.5.2 Analyzing the Causes

Retest the samples with outliers. If the retest result still contains outliers and the trend is the same as that of the previous result with outliers, see “Figure 9-1 Analyze the cause of QC outliers” to find out the cause of outliers.

Figure 9-1 Analyze the cause of QC outliers



9.5.3 Taking Corrective Measures

Analyze the possible causes of QC outliers and make corrections in time, see “Figure 9-1 Analyze the cause of QC outliers”.

9.5.4 Verifying Effectiveness of Corrective Measures

After taking corrective measures, retest the QC samples and verify whether the QC results are within the range.

If the cause of outliers is still not determined after all factors are analyzed, replace the controls with new one for verification, or directly contact the Customer Service Department or your local distributor.

10 Calibrating Your Analyzer

10.1 Overview

Calibration is a procedure to standardize the analyzer by determining its deviation under certain specified conditions. In order to get accurate sample analysis results, you should calibrate the analyzer per the procedure below when necessary.

There are two calibration programs available on this analyzer: manual calibration, calibration using calibrators. All the parameters or part of the parameters of WBC, RBC, HGB, MCV, PLT can be calibrated by the calibration programs.

10.2 When to Calibrate

Your analyzer has been calibrated at the factory just before shipment. It is electronically stable and does not require frequent recalibration if you operate and maintain it as instructed by this manual. You only need to recalibrate this analyzer if:

- A major analytical component (including sample probe, syringe, etc.) has been changed.
- The quality control results indicate there may be a problem.

CAUTION

All of the measured parameters must be calibrated before readings of this analyzer can be used as valid analysis results.

10.3 Checking before Calibration

Before calibration, make sure the analyzer's background (blank count) results are within the specified ranges.

If results are not in the range, check if the analyzer is in error. Remove the errors (if there are) and check again. If the problem persists, contact the Customer Service Department or your local distributor.

NOTE:

For information of blank count, see "B.3 Performance Specifications".

10.4 Running the Calibration Programs

The analyzer supports the following calibration programs:

- **Manual**
- **Calibrator** (administrators)

10.4.1 Notes before Calibration

Before calibration, check and make sure the analyzer works properly and enough reagents have been prepared for the calibration. You need to start over the calibration if the reagents run out during the process.

It is recommended that you create a log table for your analyzer. This log table should contain all necessary information that is pertinent to your analyzer. Suggested items that you may want to include in the log table are: calibration date, supplier of calibrator, lot number, expected results and limits, and result of background check.

NOTE:

Be sure to mix any calibrators that have been prepared for a while before running it.

10.4.2 Manual Calibration

NOTE:

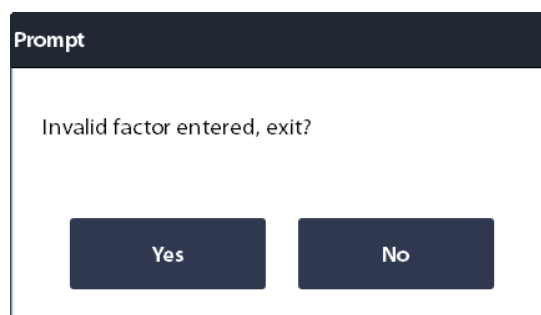
If you log in at the operator access level, you can only review calibration factors on the manual calibration screen. You cannot edit the calibration factors.

Perform the following procedure:

1. Tap **“Menu > Calibration > Manual”** to enter the manual calibration screen.
2. Enter the new calibration factors into the factor cell of the parameter that require calibration.

NOTE:

- The calibration factor entered must be in the range of 75.00% - 125.00%, and only two decimal places can be reserved.
 - If the entered calibration factors are invalid, the factors will be highlighted in red.
 - The “Date” cells automatically display the date when the new calibration factors are entered.
3. Save calibration factors.
 - a. Tap another button on the software screen.
A dialog box displays to remind you to save calibration factors.
 - b. Tap **“Yes”** to save new calibration factors.
 4. If the entered calibration factors are invalid, a dialog box will display when you are switching to another screen.



- a. If you want to re-do the calibration, tap “No”, and perform the calibration procedures again.
- b. Tap “Yes” to close the dialog box and switch to another screen without saving the changes; the original calibration factors and dates will remain unchanged.

10.4.3 Calibrating with Calibrators (Administrators)



BIOLOGICAL RISK

All the samples, controls, calibrators, wastes and areas contacting them are potentially biohazardous. Wear proper personal protective equipment (e.g., gloves, lab coat, glasses) and follow safe laboratory procedures when handling them and the contacted areas in the laboratory.

NOTE:

- For the description of calibrators, see “3.4.2 Controls and Calibrators”.
- You must use Mindray Animal Medical-specified calibrators for calibration.

Perform the following procedure:

1. Make sure you have prepared the calibrators in accordance with your laboratory procedures and the requirements in the use instruction of the calibrators.
2. Tap “Menu > Calibration > Calibrator” to enter the “Calibrator” screen.
3. Set up calibrator information.

Enter the “Lot No.”, “Exp. Date” and “Target” for each parameter.

See below for setting descriptions.

Item	Description
Lot No.	Find the lot No. on the label on the vial of the calibrator, or on the target sheet of the corresponding calibrator.
Exp. Date	The entered expiration date should be either the expiration date printed on the labeling or the open-vial expiration date, whichever is earlier. The open-vial expiration date is calculated as follows: the date that container is opened + the open-vial stability days.
Target	Find the parameter targets on the target sheet of the corresponding calibrator.

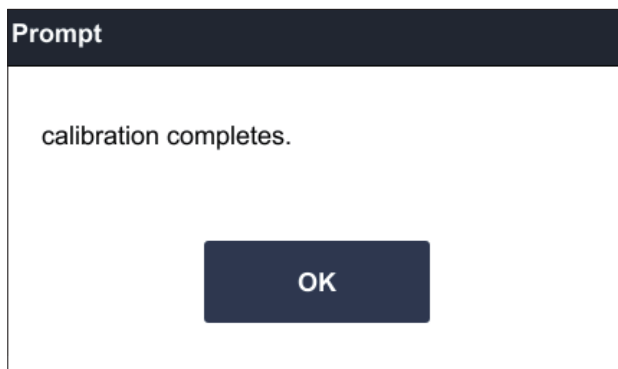
4. Set calibration mode.
5. Place the prepared calibrator in a tube, and place the tube under the sample probe.
6. Press the [Aspirate] key on the analyzer to start calibration.
7. Repeat step 5. to step 6. for analyzing remaining calibrator samples.

NOTE:

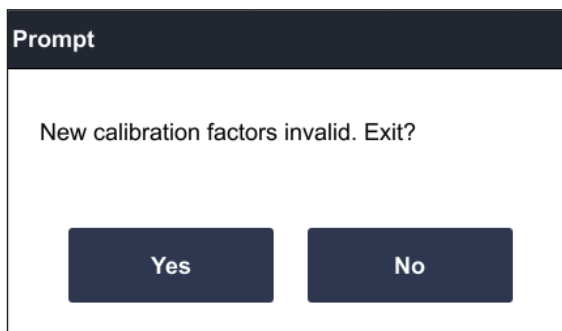
To obtain valid calibration factors, 3 to 10 valid calibration results are required.

8. When calibration count has been performed for n times ($n \geq 3$), the analyzer calculates the Mean, CV% and new calibration factors. Operators can select calibration data to calculate the calibration factors, but only after at least 3 groups of the data are marked with “√” can you get

the calibration factors. When the amount of valid calibration data in the list reaches 10, the following message box pops up.

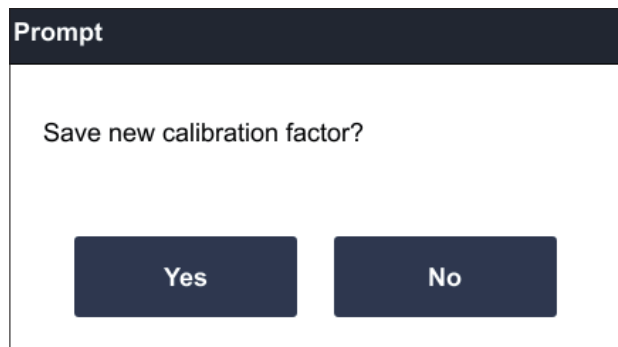


9. There may be two cases when you are switching to another screen:
- If the calibration factors of any parameter is out of the range [75%-125%] or the CV% of any parameter exceeds the reproducibility range, then the calculated calibration factors of all parameters will not be saved and a message box will also pop up.



Tap **“Yes”** to close the dialog box and switch to another screen. The calibration factors and dates of all parameters will not be changed.

- If the calculated calibration factors of all parameter are within the range [75%-125%] and the CV% of all parameter are also within the reproducibility range, then a message box will pop up.



Tap **“Yes”** to save the new calibration factors and switch to other screen.

10.4.4 Verifying Calibration Factors

Verify the calibration factors after calibration.

Verify the calibration factors using any of the following methods:

- Run the calibration at least 3 times, and check if the results are within the allowed range.
- Run the controls of high, normal, and low levels at least 3 times, and check if the results are within the allowed range.
- Run at least 3 fresh blood samples from normal patients, each sample for at least 3 times, and check if the results are within the allowed range.

10.5 Calibration History

Only administrators can view the calibration history.

Tap “**Menu > Calibration > Calibration History**” to enter the “**Calibration History**” screen.

The relevant items are described below:

Item	Description
Details	Select a calibration record and tap “ Details ” to view the detailed calibration information.
Go to	Tap “ Go to ” to view the calibration history of the specified time period.
Export	Tap “ Export ” to export the specified or all calibration records to a USB device.

NOTE:

The user should ensure the data safety of the USB devices connecting to the analyzer.

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11 Printing

You can set up the print templates for sample results report, graphs, QC results, QC graphs, manual calibration factors etc., and print them using the print templates.

11.1 Setting up Print Template

For information about print setup, see “6.3.1 System Setup”.

11.2 Printing Sample Result Report

NOTE:

The analyzer prints at most 700 records at one time.

Before printing a sample test report, confirm the following items:

- The printer has been set and connected correctly.
- There are enough paper in the printer.

11.2.1 Printing Current Sample Result Report

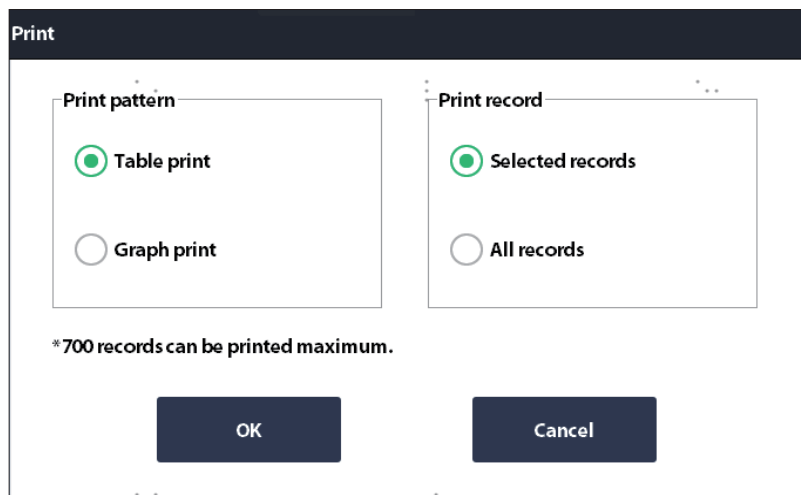
When a cycle of sample analysis finishes, tap the “**Print**” utility button on the “**Count**” screen. The analyzer automatically prints the results of the current sample according to the print setup.

11.2.2 Printing from the Table Review Screen

Perform the following procedure:

1. Tap “**Menu > Table Review**”, or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. (Optional) Tap to select one or more sample records to be printed on the test result report. If you are going to print all sample records, skip this step.
3. Tap the “**Print**” utility button.

A dialog box for printing displays.



4. Set up the print methods.

See below for setting descriptions.

Item		Description
Print pattern	Table print	Select “ Table print ”, only to print sample results, but not to print graphs (histograms and scattergrams).
	Graph print	Select “ Graph print ”, print sample results as well as the graphs (histograms and scattergrams).
Print record	Selected records	Check “ Selected records ” to print the selected sample records.
	All records	Check “ All records ” to print all the sample records.

5. Tap “OK”.

The analyzer prints the sample result reports of the selected samples.

11.2.3 Printing from the Graph Review Screen

Perform the following procedure:

1. Tap “Menu > Table Review” or tap the “Table Review” button directly to enter the “Table Review” screen.
2. Select one or more sample records of which you want to review the graph data.
The selected sample record is highlighted.
3. Tap “Graph” to enter the “Graph” screen.
4. Tap the “Print” utility button.

The analyzer automatically prints the results of the current sample according to the print setup.

11.2.4 Printing Microscopic Parameter Results

Perform the following procedure:

1. Tap “**Menu > Table Review**”, or tap the “**Table Review**” utility button to enter the “**Table Review**” screen.
2. Select one or more sample records of which you want to review the microscopic parameters.
The selected sample record is highlighted.
3. Tap “**Graph**” to enter the “**Graph**” screen.
4. Tap “**Other Para. > Microscopic Para.**” to enter the “**Microscopic Para.**” screen.
Tap “**Print**” button to print the microscopic parameter results.

11.3 Printing QC Result Report

Before printing a QC test result report, confirm the following items:

- The printer has been set up and connected correctly.
- There is enough paper in the printer.
- To print the QC results, confirm that there are results in the QC file.

11.3.1 Printing QC Results in Specified QC Files

Perform the following procedure:

1. Tap “**Menu > QC > Setup**” to enter the QC file setup screen.
2. Select the desired QC file.
3. Tap “**QC Table**” to enter the QC table screen of the selected QC file.
4. Tap the “**Print**” utility button.

The analyzer prints all the QC test results under the specified QC file.

NOTE:

When the QC test results are printed from the QC table screen, the printed report does not include QC graph.

11.3.2 Printing QC Graphs in Specified QC Graph

Perform the following procedure:

1. Tap “**Menu > QC > Setup**” in turn to enter the QC file setup screen.
2. Select the desired QC file.
3. Tap “**QC Graph**” to enter the QC graph review screen of the selected QC file.
4. Tap the “**Print**” utility button.

The analyzer prints the QC graph in the specified QC file.

11.4 Printing Manual Calibration Factors

Before printing manual calibration factors, confirm the following items:

- The printer has been set up and connected correctly.
- There is enough paper in the printer.

Perform the following procedure:

1. Tap “**Menu > Calibration > Manual**” in turn to enter the “**Manual**” screen.
2. Tap the “**Print**” utility button.

The analyzer prints the manual calibration factors.

12 Service

12.1 Overview

Preventive and corrective maintenance procedures are required to keep the analyzer in good operating conditions. This analyzer provides multiple maintenance functions for this purpose.

This chapter introduces how to use the provided functions to maintain and troubleshoot your analyzer.

CAUTION

- **Improper maintenance may damage the analyzer. Operators must follow the instruction of this Operator's Manual to perform maintenance operations. For problems not mentioned in this manual, contact the Customer Service Department or your local distributor for service advice.**
 - **Only parts supplied by Mindray Animal Medical can be used for maintenance. For any question, contact the Customer Service Department or your local distributor.**
-

NOTE:

Contact the Mindray Animal Medical or authorized distributors in time if any damaged part is found.

12.2 When and Why to Perform the Maintenance

12.2.1 Maintenance of Parts and Components

Table 12-1 Maintenance of parts and components

Item/Software access		Timing	Purpose
Self-Test (Service > Debug & Self-Test > Self-Test)	Valve	Perform the self-test under the instruction of the service people	/
	Fluidics Debug	Perform the self-test under the instruction of the service people	/

Table 12-1 Maintenance of parts and components

Item/Software access		Timing	Purpose
Probe Cleanser Maint. (Service > Maintenance > Probe Cleanser Maint.)	Apertures	When clogging error is frequently reported	Clean the RBC channel
	Flow Cell	- When there are a great amount of bad blood sample differential cases - When there are flow cell errors reported	Clean the flow cell
Cleaning (Service > Maintenance > Cleaning)	Cleaning	When the background results are unqualified	Fluidics cleaning
Fluidics (Service > Maintenance > Fluidics)	Probe Cleanser Maint.	When the background results are unqualified or repeatability results continuously do not meet requirements	Thoroughly clean the fluidics, parts and components
	Pack-up	When the analyzer will not be used for a long time (over 10 days)	Remove the residue reagent in the pipelines
Sensor Maint. (Service > Maintenance > Sensor Maint.)	Clean Flow Cell	- When there are a great amount of bad blood sample differential cases - When there are flow cell errors reported	Clean the flow cell
Screen Cal. (Service > Screen Cal.)	Screen Cal.	When the touch screen response to touching is not sensitive or accurate	Calibrate touch screen

Table 12-2 Replacing and priming with reagent

Item/Software access		Timing	Purpose of maintenance
Replace Reagent (Service > Maintenance > Reagent)	DS Diluent	When the reagent runs out or insufficient	Replace the residue reagent in the pipelines
	Replace LH lyse		
	Replace LD lyse		
	Replace DR diluent		
	Replace FD dye		
	Replace FR dye		
	SR Solution Reagent		
Prime Reagent (Service > Maintenance > Reagent)	DS Diluent	When reagents are contaminated or expired	Replace the residue reagent in the pipelines
	Prime LH lyse		
	Prime LD lyse		
	Prime DR diluent		
	Prime FD dye		
	Prime FR dye		
	SR Solution Reagent		

12.2.2 Manual Cleaning

Table 12-3 Manual cleaning

Program	Timing	Purpose
Clean sample probe and blood barrier	Every month	Remove the blood sample and other residues in the probe wipe and blood barrier bracket
Cover cleaning	As needed	Remove contaminants on the cover

12.2.3 Replacing the Parts and Components

Table 12-4 Replacing parts and components

Program	Timing	Purpose
Replace sample probe	The sample probe is damaged	Contact Customer Service Department for replacement

CAUTION

Only parts supplied by Mindray Animal Medical can be used for maintenance. For any question, contact Customer Service Department.

12.3 Reagent Management

⚠ CAUTION

In case of power failure or upgrade, take out the latex reagent stored in the latex reagent compartment in time and store it in a refrigeration environment of 2°C to 8°C.

12.3.1 Viewing Reagent Information

Tap “Menu > Setup > Reagent Setup” to enter the “Reagent Setup” screen. On this screen, operators may review the expiration dates, use before dates, open dates, valid days and remaining volumes of reagents.

NOTE:

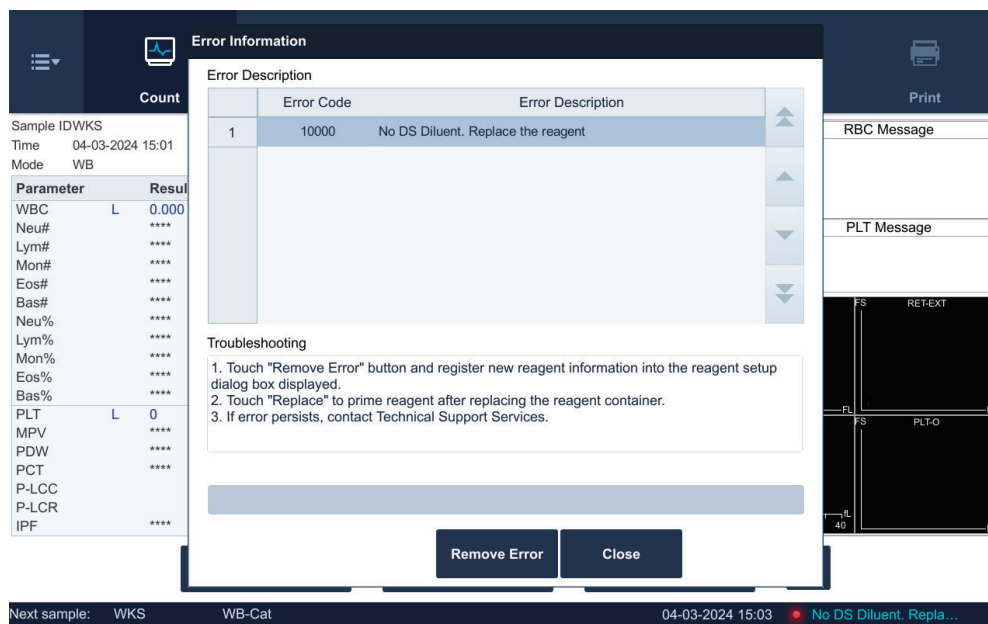
- When the remaining volume of reagents is less than 10% and the analyzer is not performing sample analysis, a prompt for reagent alert will pop up. Tap “OK” to close the prompt.
- The prompt will pop up again at the startup of the analyzer if the reagent is not replaced after closing the prompt.

12.3.2 Troubleshooting for Mistaken Reagent Error Messages

When error messages for no reagent are reported mistakenly, while there are sufficient reagent volume, perform the following procedure to remove errors.

1. Tap the error message in the lower right corner of the screen.

The “Error Information” dialog box pops up.



2. Tap “Remove Error”, and enter the reagent setup screen.
3. Swipe the corresponding RFID card, and the reagent information is refreshed.

Setup

Reagent Name	Expiration Date	Volume(mL)
DR DILUENT	10-08-2024	975.320
DS DILUENT	10-31-2024	5340.964

Enter Reagent Information



Card used (Date:
Analyzer:
)

DS DILUENT loading succeeded!

Replace

- Tap “**Replace**”, and the error message is removed.

12.3.3 Replacing the Reagents

Replace the reagent when the reagent runs out, or when the reagent is insufficient or expired

The whole reagent replacing procedure includes the following steps:

- Read reagent information by swiping RFID cards.
- Install new reagents.
- Tap “**Replace**” button.

BIOLOGICAL RISK

After replacing the reagent container/bag, check the tubing connected to the cap assembly and make sure it is not bent over.

WARNING

While installing or replacing the fluorescent dye bag, hold the upper corners of the bag or the part under the bag mouth (where the interior tube is located), in order not to extrude the reagent out.

Read reagent information by swiping RFID cards

Perform the following procedure:

- Enter the “**Setup**” dialog box.

You can enter the “**Setup**” dialog box in either of the following ways:

- When reagent-related errors occur, alarm messages occur in the lower right corner of the screen. The “**Error Information**” dialog box prompts and tap “**Remove Error**”.

- Tap the “**Reagent Setup**” button or tap “**Menu > Setup > Reagent Setup**” to enter the “**Reagent Setup**” screen. Select the reagent that needs to be replaced (multiple reagents can be selected concurrently), and then tap “**Setup**”.

The “**Setup**” dialog box pops up, and the top part displays the information of the reagent to be replaced

Reagent Name	Expiration Date	Volume(mL)
DR DILUENT	01-01-2036	28.000

Enter Reagent Information

Exit

2. Read reagent information by swiping RFID cards.

- DS diluent: tear the RFID card from the DS diluent reagent bottle and close the RFID card to the swiping card area. After reading the information on the RFID card, attach the RFID card to the DS diluent reagent bottle.
- FD dye and FR dye: close the label on the reagent bag to the swiping card area directly.
- LD, LH, DR and SR reagent: close the RFID card on label of the reagent bottle to the swiping card area.

Identification rules:

- A beep sound occurs if the reagent information is successfully identified.
- Three beep sounds occur if there is a mismatch between the RFID card and the reagent.

NOTE:

- Keep and store the DS diluent RFID card properly.
- Each RFID card can be swiped repeatedly on the same analyzer.
- The current system date is set as the open date of the reagent if the reagent information is successfully identified for the first time.
- When you are entering an expired reagent, the analyzer will prompt you to check whether the reagent is expired.
- When multiple reagents need to be replaced, swipe RFID cards for these reagent and perform the next steps.

Install new reagents

NOTE:

When installing new reagents, make sure the color of reagent cap assembly is the same as the color in the rectangle box in reagent label.

Replace dye

Perform the following procedure:

1. Open the dye compartment door.
2. Get a new dye bag, open the cap and the aluminum film sealing the bag.
3. Take out the bag to be replaced along the direction of the supporting rack.
4. Turn the cap of the old reagent container counterclockwise, and then take out the cap assembly with caution.

NOTE:

If the pickup tube of the cap assembly is stuck when it is taken out of the dye bag, slightly adjust the position of the pickup tube and then take it out without pulling by force.

5. Insert the pickup tube of the cap assembly vertically into the new container, and then turn the cap clockwise until it is secured.

NOTE:

During replacement, make sure that the pickup tube of the cap assembly does not reach the bottom of the reagent bag, otherwise the reagent cannot be aspirated normally.

6. Put the sealed new bag back on the support rack, making sure the bag is securely accommodated.
7. Cap the old bag using the cap of the new bag and dispose of the old bag properly.

Replace other reagents

Perform the following procedure:

1. Remove the cap of a new reagent container, and place the container next to the one to be replaced.
2. Turn the cap of the old container counterclockwise, and then take out the cap assembly with caution.
3. Insert the pickup tube of the cap assembly into the new container, and then turn the cap clockwise until it is secured.
4. Cap the old container with the cap of the new container and dispose of the container properly.

Tap “Replace” button

After swiping RFID card and installing new reagents, tap “**Replace**” button in the “**Setup**” dialog box. The analyzer will automatically prime reagent and replace the old reagent.

12.3.4 Discharging the Wastes



BIOLOGICAL RISK

- All the samples, controls, calibrators, wastes and areas contacted them are potentially biohazardous. Wear proper personal protective equipment (e.g. gloves, lab coat, goggles,

etc.) and follow safety procedures in the laboratory when handling them and the contacted areas in the laboratory.

- **Be sure to dispose of reagents, waste, samples, consumables, etc. according to government regulations.**
 - **Remove the waste container cap only when the power indicator is not flickering, in order not to make the waste overflow from the container.**
 - **If the waste is discharged using the waste container, make sure the pickup tube of the waste container cap assembly is above, and the tube is smooth and not bent.**
-

If the waste is discharged using the waste container, discharge the waste when the analyzer prompts errors for full waste container. Perform the following procedure:

1. Rotate the waste container cap assembly counterclockwise and remove the waste container cap assembly carefully.
2. Discharge the waste.
3. Insert the pickup tube of the waste container cap assembly into the waste container, and then rotate the waste container cap assembly clockwise until it is secured.

12.4 Probe Cleanser Maintenance

12.4.1 Routine Probe Cleanser Maintenance

After you set the probe cleanser maintenance time in “**Setup > Maintenance**”, the analyzer prompts you to maintain the probe cleanser at the set time.

Perform the following procedure:

1. When the “**Time for maintenance. Perform Probe Cleanser maintenance now?**” dialog box displays, tap “**Yes**”.
 - The analyzer prepares for Probe Cleanser maintenance. After the preparation for Probe Cleanser maintenance completes, a dialog box displays.
 - The sample probe lowers to the aspiration position.
2. Present the uncapped Probe Cleanser under the sample probe as instructed on the screen.
3. Press the [Aspirate] key to start probe cleanser maintenance.

The analyzer aspirates Probe Cleanser.

4. Remove the Probe Cleanser.

The analyzer automatically completes Probe Cleanser maintenance.

You can also complete probe cleanser maintenance on the “**Fluidics**” screen.

Perform the following procedure:

1. Tap “**Menu > Service > Maintenance > Fluidics**” in turn to enter the “**Fluidics**” screen.
2. Tap “**Probe Cleanser Maint.**”.
 - The analyzer prepares for Probe Cleanser maintenance. After the preparation for Probe Cleanser maintenance completes, a dialog box displays.
 - The sample probe lowers to the aspiration position.
3. Present the uncapped probe cleanser under the sample probe as instructed on the screen.
4. Press the [Aspirate] key to start probe cleanser maintenance.

The analyzer aspirates Probe Cleanser.

5. Remove the Probe Cleanser.

The analyzer automatically completes Probe Cleanser maintenance.

12.4.2 Probe Cleanser Maintenance to Parts and Components

You may perform Probe Cleanser maintenance to parts and components when necessary.

Perform the following procedure:

1. Tap “**Menu > Service > Maintenance > Probe Cleanser Maint.**” in turn to enter the “**Probe Cleanser Maint.**” screen.
2. Tap the buttons of the parts and components that need Probe Cleanser maintenance.
 - The analyzer prepares for probe cleanser maintenance. After the preparation for probe cleanser maintenance completes, a dialog box displays.
 - The sample probe lowers to the aspiration position.
3. Present the uncapped probe cleanser under the sample probe as instructed on the screen.
4. Press the [Aspirate] key to start probe cleanser maintenance.

The analyzer aspirates probe cleanser.

5. Remove the probe cleanser.

The analyzer automatically completes probe cleanser maintenance.

12.5 Auto-cleaning of the Parts and Components

You should clean the following parts or components when:

Perform the following procedure:

1. Tap “**Menu > Service > Maintenance > Cleaning**” to enter the “**Cleaning**” screen.
2. Tap the corresponding cleaning program.

The analyzer automatically completes the operation.

12.6 Manual Cleaning of Parts and Components

You should clean the following parts and components when:

Program	Timing	Purpose	Tools needed
Clean the probe wipe	Every month	Remove the blood sample and other residues in the probe wipe	Alcohol, Probe Cleanser, clean water, and sterilized cotton swab
Cover cleaning	As needed	Remove contaminants on the cover	Disinfectant (see “12.6.2 Cleaning the Analyzer Front Cover” for types of disinfectant)

12.6.1 Cleaning the Probe Wipe and Blood Barrier Bracket

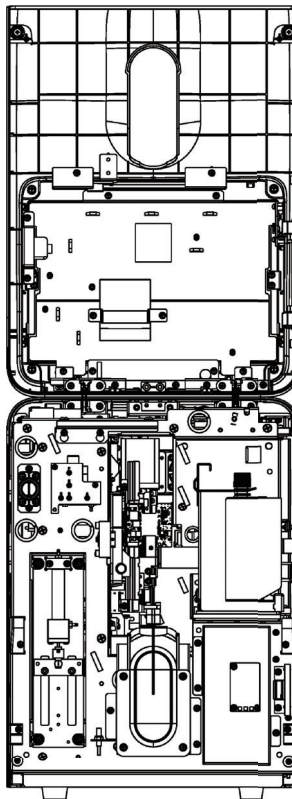
CAUTION

Before cleaning the probe wipe, make sure the analyzer is shut down and the power supply is turned off.

Follow the following instructions:

1. Open the front cover of the analyzer

Hold the bottom of the front cover with both hands and open the front cover upward until it stands on the top cover.



2. Clean the probe wipe and blood barrier bracket
 - a. Push the sample probe assembly forward slightly to reserve sufficient operation and maintenance space.