RADIOMETER

AQT90 FLEX

Instructions for use

from software version 8.9

What is new in this manual?

The manual has been updated with these major changes:

- Changes due to software version 8.9 update
- Additional conceptual information added (for instance topics about how to log off, about the activities log, etc.)
- Prerequisites split up in required items and prerequisites

Contents

1. Introduction

2. Getting to know the analyzer

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5. Quality control

6. Calibration adjustment

7. Troubleshooting

8. Shutting down, moving and restarting the analyzer

9. Installation

10. Setup

Introduction 1

Intended use

For *in vitro* diagnostic use.

The AQT90 FLEX analyzer is an immunoassay instrument based on the quantitative determination of time-resolved fluorescence to estimate the concentrations of clinically relevant markers on whole-blood and plasma specimens to which a relevant anticoagulant has been added. It is intended for use in point-of-care and laboratory settings.

Note: The *AQT90 FLEX parameter-specific Test Kit* inserts tell you whether both types of sample can be used and lists the anticoagulants that can be used for each assay/test.

Limitations of use

Patient test results must always be interpreted in the relevant clinical context.

⚠ **WARNING – *Risk of incorrect results on subsequent samples***
Only analyze human blood and plasma samples or dedicated quality control material.

⚠ **CAUTION – *Risk of equipment damage***
Only analyze human blood and plasma samples or dedicated quality control material.

Operator training

Operators must be trained to use this analyzer.

Documentation

⚠ **CAUTION – *Risk of equipment damage***
The documents in the table give instructions for the safe and proper operation of the analyzer. Radiometer does not accept warranty claims or product liability if operators do not obey the instructions.

Document	Description
This document, namely the *AQT90 FLEX instructions for use*	How to install and set up the analyzer, instructions for daily use and reference information
Inserts	Instructions and information about consumables supplied for use with the analyzer
Ordering information	Name and reference ordering number (REF) of products used with the analyzer

Hazards

A hazard symbol shows which instructions an operator must obey to prevent risk to persons or equipment. There are two types of hazard.

Hazard type	Hazard symbol	Risk
WARNING	⚠	Death or injury to persons
CAUTION	⚠	Equipment damage

General warnings, cautions and notes

⚠ **WARNING – *Risk of electric shock***
Make sure the analyzer is a minimum of 1.5 m from patient beds.

⚠ **WARNING – *Risk of infection***
Dispose of all used sample tubes, liquid quality control (LQC) tubes and Solution Packs as biohazardous waste. Follow your local regulations.

⚠ **CAUTION – *Risk of equipment damage***
Instructions for use documents are provided with the analyzer. Use them to find out how to operate the analyzer. Radiometer will not accept warranty claims or product liability claims if procedures are not followed.

Note: Do not put paper or other objects underneath the analyzer as it will decrease the volume of air that can be drawn through the analyzer to cool it.

Note: The **Enable system keys** function must be disabled when leaving the service programs.

Note: Software is considered a spare part. Only spare parts approved by Radiometer must be installed on the analyzer.

Getting to know the analyzer 2

Overview of the analyzer

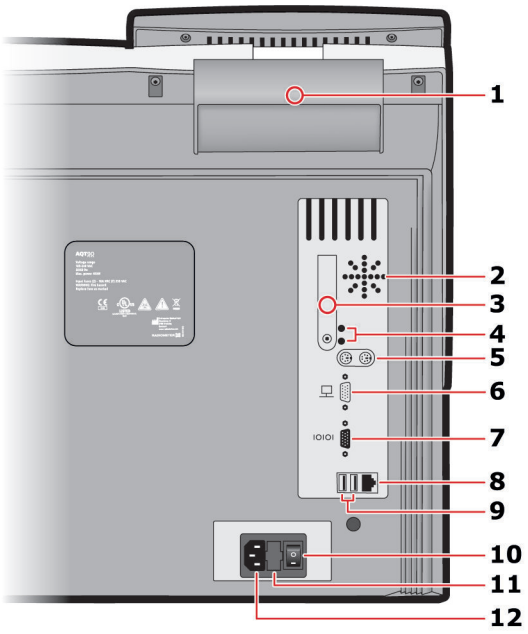
Front view

1	Touch screen	**5**	Solution Pack compartment
2	Sample inlet	**6**	USB port
3	Barcode reader	**7**	Solution Pack
4	Compartment for cartridges		

Use of the barcode reader

The barcode reader is used to read data in barcodes supplied with consumables and barcodes that identify personnel, patients and patient samples.

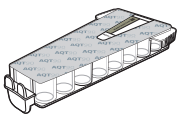
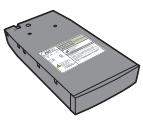
Back view

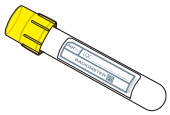
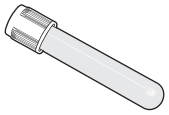


1. Thermal printer
2. Speaker
3. Memory card
4. Reset buttons
5. External keyboard and mouse ports
6. External monitor port
7. Barcode reader port, serial communication port
8. Network cable port
9. USB ports
10. Power switch ON (—) and OFF (O)
11. Mains power fuse
12. Mains power socket

Consumables

Consumables are products that are used up during operation of the analyzer.

Consumables	Description
 Cartridges	Cartridges for calibration adjustment, tests and maintenance activities
 Solution Pack	Contains buffer material and closed containers that hold used test cups and liquid waste

Consumables	Description
 Thermal printer paper	Paper for the thermal printer
 LQC material	Liquid quality control material
 Cleaning Solution Tubes	Contain cleaning solution for system clean and maintenance activities
Empty Tube Kit	Used for non-Radiometer LQC material
 Sample tubes	Used to hold samples for analysis

Related information

Approved primary sample tube requirements, page 157
Approved secondary sample tube requirements, page 158

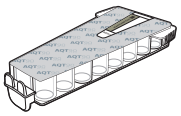
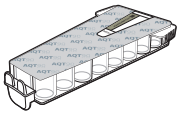
To see details about installed consumables

1. Tap **Menu** > **Analyzer status** > **Consumables**.
   Some data is shown.
2. Tap the **Detailed inventory** button to see more data about the installed cartridges.

Data about installed consumables

The **Consumables** part of the **Analyzer status** screen shows data about the installed Solution Pack and some data about the installed cartridges. More data about each installed cartridge is shown in the **Detailed inventory** screen.

Consumables	Screen	Details
Solution Pack 	**Consumables**	• Lot number • Installation date • On-board expiry date and time • Remaining cup capacity. This is the estimated number of used test cups the Solution Pack still has space for.

Consumables	Screen	Details
Cartridges 	**Consumables**	• Total number of remaining tests for each parameter • Total number of used/expired cartridges for each parameter
Cartridges 	**Detailed inventory**	• Number of remaining tests • Lot number • On-board expiry date • Cartridge type • Status - valid or invalid. Cartridges are valid until their expiry date or on-board expiry date. • Calibration adjusted? - yes or no

About on-board expiry date of consumables

Two values are used to determine the **On-board expiry date** of a consumable. The expiry date and the on-board stability. The expiry date is the date after which a consumable cannot be used. The on-board stability is the period of time a consumable can be used after it is installed on the analyzer.

The on-board expiry date for Test and CAL Cartridges, Blank Cartridges and the AQT90 FLEX Solution Pack is calculated as follows:

On-board expiry date = ([Date of installation] + [On-board stability period]) ≤ Expiry date

Related information
To find the on-board expiry date of cartridges, page 37

Is the analyzer ready for use?

Three important conditions

The analyzer is ready for use when three conditions are present.

1. The analyzer is in one of three **Ready** modes: **Ready**, **Ready for sample registration**, or **Ready for sample registration and cartridge replacement**.
2. The color of the tab of the parameters you want to get a result for must be green or yellow.
3. The color of the traffic light in the **Analyzer status** button is green or yellow.

Parameter tab colors

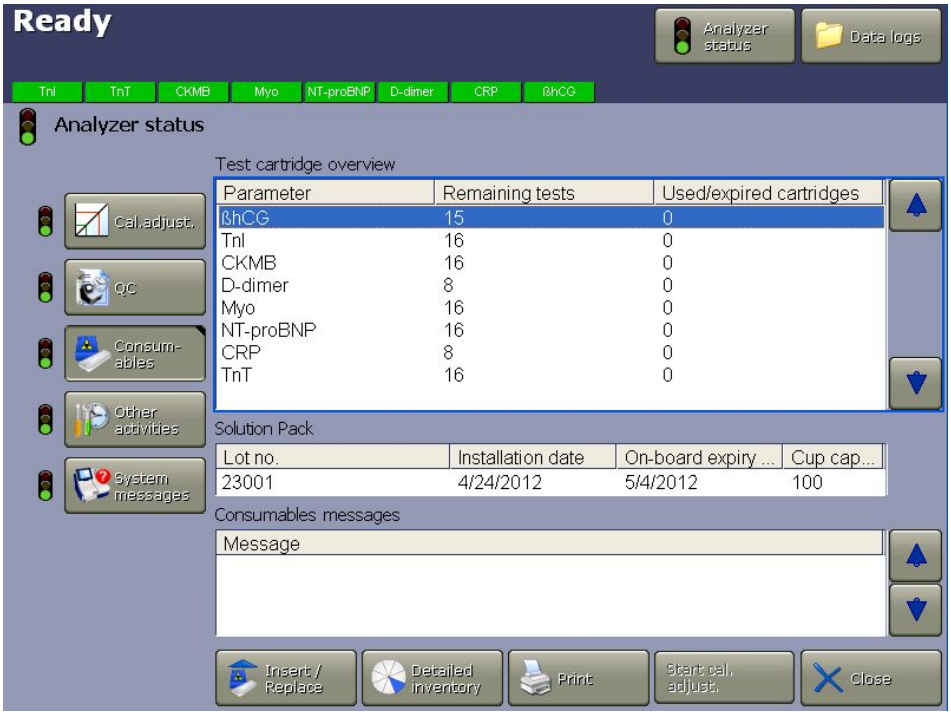
Parameter tab color	Indication
Green	The parameter can be measured

Parameter tab color	Indication
Yellow (with one line crossing)	An LQC error was found but the parameter can be measured
Red (with two lines crossing)	The parameter cannot be measured. The conditions that may cause a tab to be red are shown below. • No Test Cartridge is installed for the parameter • Installed Test Cartridges for the parameter have not been calibration adjusted, or no tests are available on them, or they are not valid • An operator has locked the parameter • A scheduled LQC measurement of the parameter is overdue • An LQC error was found. Corrective action has locked the parameter. • A scheduled system clean is overdue **Note:** A cartridge is not valid after its on-board expiry date or expiry date.

Related information

To set up corrective action for errors in LQC results, page 128

The Analyzer status screen



The traffic light shown on the left side of the buttons in the **Analyzer status** screen shows the status of:

- Calibration adjustment
- Quality control
- Consumables
- Other activities (for example, maintenance activities)
- System messages

A green traffic light shows that there are no issues. A yellow traffic light shows that there is a non-critical issue. A red traffic light shows that there is critical issue.

The color of the traffic light on the **Analyzer status** button shows the most critical issue shown by these five traffic lights.

Analyzer status - Traffic light colors

Traffic light color	Indication	Consequences
Green	No issues were found	All operations are possible
Yellow	A non-critical issue was found	Measurements and other activities are possible, but one or more issues need attention
Red	A critical issue was found	• LQC measurements can be done if the analyzer operating mode is **Locked - LQC pending** • System clean can be done in **Maintenance** and **Replacement** mode • Calibration adjustment can be done in **Replacement** mode if there is sufficient capacity in the Solution Pack No other type of measurements are possible.

Messages

The analyzer uses messages to tell operators something. There are different types of messages.

Message type	Where messages are shown
Status	In **Analyzer status** screens
Feedback	In the space above the parameter bar. **Note:** Feedback messages tell operators something about an action that they have just done. Feedback messages are shown for a short period of time.
Pop-up	In pop-up windows. **Note:** Operators have to tap a button in pop-up windows to close them.
Result	In result message screens
Activity	In the **Activity log** screen

About issues

Issues are messages that tell you about conditions that require some action.

To find and troubleshoot issues

Prerequisite(s)

- The traffic light in the **Analyzer status** button is yellow or red

1. Tap **Menu** > **Analyzer status**.
2. Tap the button on the right side of a yellow or red traffic light.
3. Read and note the message numbers.
4. Troubleshoot the messages.

5. Do steps 2 to 4 again for each button with a yellow or red traffic light.
6. Tap the **Close** button.

Related information
To troubleshoot messages, page 76

Ready modes

Normally, the analyzer operates in one of the three **Ready** modes shown in the table.

Mode	Indication
Ready	You can use the analyzer for any operation
Ready for sample registration	You can put a new sample in the sample inlet and register it, while another sample is being analyzed
Ready for sample registration and cartridge replacement	You can put a new sample in the sample inlet and register it or insert/replace cartridges, while another sample is being analyzed

Non-Ready modes

Normally, the analyzer operates in one of its three **Ready** modes. However, conditions will sometimes cause the analyzer to operate in non-Ready modes. The table shows the conditions that may cause each mode.

Mode	Indication
Busy	• The inlet wheel is rotating to mix a sample. • Two samples are in the inlet wheel. One is being analyzed. The other sample is registered and waits to be analyzed.
Error	No operations can be done
Locked	In-progress analyses will be completed, but no new analyses will be started
Locked - QC pending	A scheduled LQC measurement is overdue
Maintenance	• A maintenance activity is overdue • A set critical limit was exceeded • Liquid waste flow is inadequate
Not operational	• The incubation temperature is outside its specified range • No Solution Pack is installed
Not operational Automatic recovery in progress. Please wait.	An automatic shutdown and restart procedure is in progress. The procedure may remove a condition that would cause the analyzer to go into “Error” mode.
Replacement	• A consumable is being inserted/replaced • No valid test cups are available • Installed Test Cartridges are not calibration adjusted • The installed Solution Pack has either passed its on-board expiry date or its expiry date
Service	The **Service** menu of the analyzer is open
Shutdown	A shutdown procedure was either started by an operator, or automatically started by the analyzer

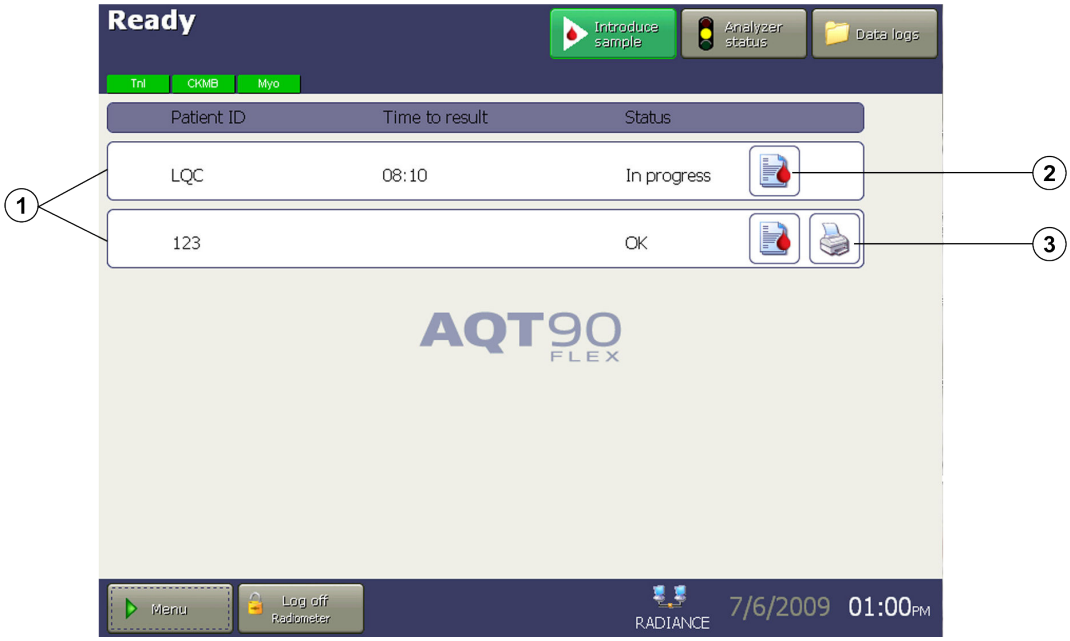
Mode	Indication
Startup	The mains power switch has been put in the ON (—) position

Related information
To get back to a "Ready" mode, page 75

User interface

Result links

Result links (1) show the **Time to result** of in-progress measurements, the **Status** of the current and previous measurement results, and buttons you can tap to see results (2) and to print results (3).



Status in result links

Status	Explanation
In progress	A measurement or activity is being done
OK	The measurement was successfully completed
Not reviewed	The patient result has not been approved or rejected
?	An error was found during the measurement
Interrupted	The measurement was stopped by an operator
Aborted	The measurement was stopped by the analyzer

Back and Close buttons

	This button saves changes and goes to the previous screen
	The button saves changes and closes the screen

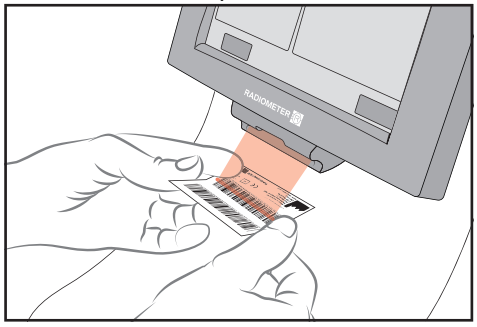
Check buttons

Deselected check button	Selected check button
	

Basic tasks

To scan a barcode

1. Hold the barcode parallel to the barcode reader and no more than 7 cm from it.



To enter text

1. Tap where you want to enter text.
2. Choose an option and follow the steps for it.

Option	Steps
To use the keyboard on the screen	**a)** Tap the  button. **b)** Enter the text. **c)** Tap the  button.
To use an external keyboard	**a)** Enter the text. **b)** Press the Enter key.

To log on

1. Tap **Menu** > **Log on**.
2. Enter or scan data into the fields.

   Note: If that is not possible, tap the **Alternate logon** button and enter or scan data into the fields.

To log off

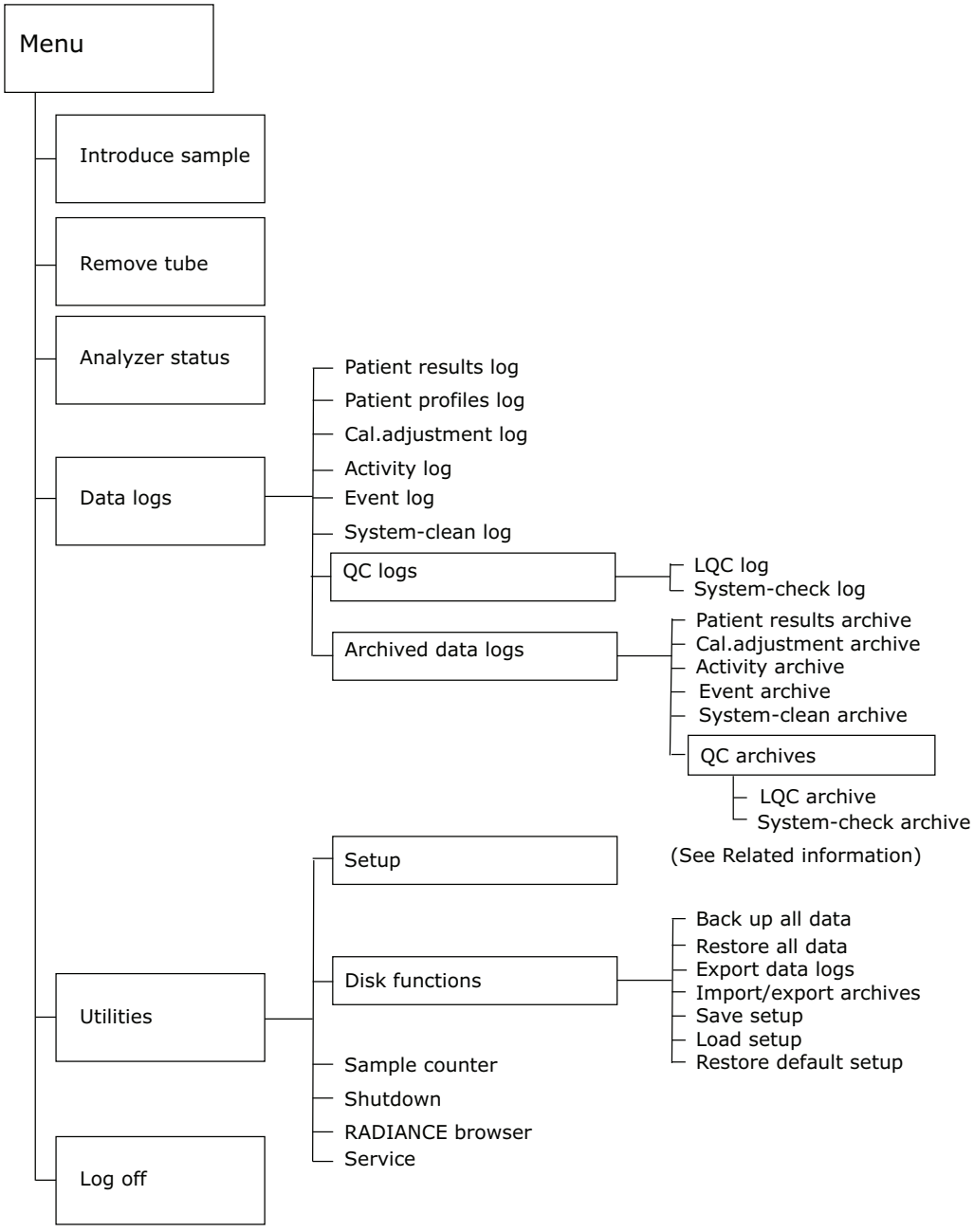
1. Tap **Menu** > **Log off**.

To save changes

1. Tap the **Back** button or the **Close** button.

Menu

Menu structure



Data logs

Overview of data logs

Data logs are where results of measurements and activities are kept.

Data logs	Content
Patient results log	• Results of patient sample analyses • Results of calibration-verification and reportable range measurements (referred to as LCR measurements)
Patient profiles log	The **Patient ID**, **First name** and **Last name** of patients whose blood has been analyzed
Cal.adjustment log	Results of calibration adjustments
Activity log	Activities done on or by the analyzer
Event log	Activities done by specified operators
System-clean log	Date and status (successful or not) of system cleans
LQC log	• Results of LQC measurements • Results of LQC measurements done after calibration adjustments (referred to as calibration-verification measurements)
System-check log	Results of system check tests
Archived data logs	The oldest results/activities from the data logs. **Note:** Automatic archiving must be set up.

To access data logs

1. Tap **Menu** > **Data logs**.
2. Tap the data log you want.

Patient profiles log

Patient profiles log

A patient profile contains data that helps to identify a patient.

Data entered in the **Patient identification** screen during a sample analysis is saved in the **Patient profiles log**.

When the **Patient ID** field in the **Patient identification** screen is filled in, patient profile data is automatically downloaded to the screen from the log.

Note: If the analyzer is set up to automatically request patient data from a LIS/HIS/data management system, the received data updates existing data in the screen and the log.

To edit a patient profile

1. Tap **Menu** > **Data logs** > **Patient profiles log**.
2. Select the patient profile.
3. Tap the **Edit** button.
4. Edit the values you want to edit.
5. Tap the **Back** > **Close** buttons.

To add a new patient profile

1. Tap **Menu** > **Data logs** > **Patient profiles log**.
2. Tap the **Add new** button.
3. Enter data in the **Patient ID** field.
4. Enter data in other fields that help to identify the patient.
5. Tap the **Back** > **Close** buttons.

To remove/delete a patient profile

1. Tap **Menu** > **Data logs** > **Patient profiles log**.
2. Select the patient profile.
3. Tap the **Remove** button.
4. Tap the **Close** button.

To find a patient profile

1. Tap **Menu** > **Data logs** > **Patient profiles log**.
2. Tap the **Find** button.
3. Select the field of the criterion you want to use to find the patient profile. For example **Patient ID**.
4. Enter data in the field.
5. Tap in the field you selected in step 3.
6. Tap the **Find** button.

Activity log

About the Activity log

The **Activity log** is where activities done on or by the analyzer are saved.

To see activities in the Activity log

1. Tap **Menu** > **Data logs** > **Activity log**.

To add a message to the Activity log

1. Tap **Menu** > **Data logs** > **Activity log**.
2. Tap the **Add message** button.
3. Enter the message.

To filter activities from the Activity log

1. Tap **Menu** > **Data logs** > **Activity log**.
2. Tap the **Filter** button.
3. In the **Criteria** frame, choose an option and follow the steps for it.

Option	Steps
To select a time period prior to today's date	Tap the number button for the number of days you want
To select a start and end date	Enter data in the **Start date** and **End date** fields

4. Select the next criterion. If necessary, enter or select a value for it.
5. Do step 4 again for each criterion.
6. Tap the **Apply** button.

Patient sample analysis 3

General warnings and cautions

⚠ **WARNING – *Risk of incorrect results***
For sample collection, do not use tubes that contain a gel.

⚠ **WARNING – *Risk of infection***
Only let authorized personnel collect and work with blood samples. Make sure they wear approved gloves.

⚠ **WARNING – *Risk of incorrect results on subsequent samples***
Only analyze human blood and plasma samples or dedicated quality control material.

⚠ **CAUTION – *Risk of equipment damage***
Only analyze human blood or plasma samples or dedicated quality control material on the analyzer.

⚠ **WARNING – *Risk of infection***
Dispose of all used sample tubes, liquid quality control (LQC) tubes and Solution Packs as biohazardous waste. Follow your local regulations.

⚠ **WARNING – *Risk of temporary disturbance of vision***
Do not stare into the laser beam in the sample inlet.

Good results come from good samples

What is a good sample?

Characteristics of a good sample	Why is this important?
Collected in a sample tube that is approved for use with the analyzer	• Easy to insert the tube in the analyzer • Tube stays in place during analysis
Sample tube contains no gel	To avoid incorrect results ⚠ **WARNING – *Risk of incorrect results*** For sample collection, do not use tubes that contain a gel.
Sample tube contains a recommended anticoagulant for the tests to be done	To avoid incorrect results
Sample is clearly and uniquely identified	To prevent patient sample mix up
Sample is collected by needle puncture	To get a representative patient sample
When needle puncture is not possible, infusion in a patient limb is stopped a minimum of 10 minutes before the sample is collected	To prevent dilution of the patient sample

Characteristics of a good sample	Why is this important?
Sample volume collected is a minimum of 2 mL	• To avoid having to collect a new sample • To avoid delay in medical treatment
Sample tube is allowed to fill to its pre-determined volume	To avoid incorrect results
Sample is mixed immediately after it is collected	• To prevent coagulation of the blood sample • To avoid incorrect results
The correct sample type (whole-blood or plasma) is analyzed*	To avoid incorrect results
Sample is analyzed immediately after it is collected. When this is not possible, the sample must be handled and stored correctly, and analyzed within the time period given in 'Sample handling and storage*.	To avoid sample degeneration and incorrect results

* See the *AQT90 FLEX parameter-specific Test Kit* inserts for details.

Note: The table includes most but not all the characteristics of a good sample.

Related information

About primary sample tubes, page 157
Approved primary sample tube requirements, page 157
About secondary sample tubes, page 157
Approved secondary sample tube requirements, page 158

Sample handling and storage

See the *AQT90 FLEX parameter-specific Test Kit* inserts for details.

Sample tubes

Only use sample tubes approved for use with the analyzer, which contain a recommended anticoagulant for the parameters to be measured.

For approved anticoagulants, see the *AQT90 FLEX parameter-specific Test Kit* inserts.

Related information

Approved primary sample tube requirements, page 157

Anticoagulants

See the *AQT90 FLEX parameter-specific Test Kit* inserts for details.

Sample types

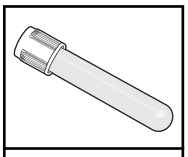
To find out what type of sample (whole-blood or plasma) can be used for each test, see the *AQT90 FLEX parameter-specific Test Kit* inserts.

Sample size

The minimum sample volume is 2 mL (independent of the number of tests requested).

To get a good sample

Required item(s)



An approved sample tube

1. Label the sample. Use more than one patient identifier.
2. Collect the sample from a suitable site.
3. ⚠ **WARNING – *Risk of incorrect results***
   Let the tube fill to its predetermined volume. Follow the sample tube manufacturer's instructions.
4. ⚠ **WARNING – *Risk of incorrect results***
   Mix the sample immediately after it is collected. For example: Gently turn the tube upside down 5 times. Follow sample tube manufacturer's instructions.
5. Analyze the sample immediately after mixing.

   Note: When this is not possible, handle and store the sample correctly, gently mix it just before analysis and analyze it within the maximum sample age period.

Related information
Approved primary sample tube requirements, page 157

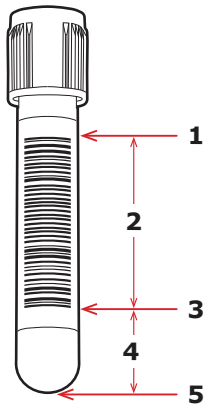
Maximum sample age

This is the period of time after a sample is collected within which whole-blood samples kept at an ambient temperature of 18-25 °C (65-77 °F) must be analyzed. The value set must be valid for all parameters.

See the *AQT90 FLEX parameter-specific Test Kit* inserts for details.

Barcode labels on sample tubes

The diagram shows you where to put a barcode label on a sample tube.



1 Top of the barcode

2 Maximum 55 mm

3 Bottom of the barcode

4 Minimum 10 mm

5 Bottom of the sample tube

Analyzing patient samples

To analyze a patient sample

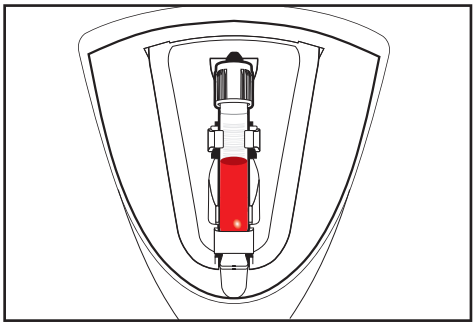
Prerequisite(s)

- A good sample
- The analyzer is in one of three **Ready** modes: **Ready**, **Ready for sample registration** or **Ready for sample registration and cartridge replacement**.

Note: A maximum of 5 tests can be selected. This is the maximum number of times the rubber septum of a sample tube can be pierced without risking septum disintegration, resultant sample contamination and incorrect results.

1. Tap the **Introduce sample** button.

   Note: If there is a tube in the tube holder, remove it.
2. Put the tube into the tube holder with its cap side upwards and barcode pointing inwards. Press the tube down between the rollers.



Note: If necessary change the **Report layout**.

3. Enter the necessary data in the **Patient identification** screen.

   Note: Do not enter more than 20 characters in the **Patient ID** field. Only the first 20 characters are sent to a connected LIS/HIS/data management system.

   Note: You must enter data in fields with this icon:  .

4. Tap the **Accept** button.
5. ⚠ **WARNING – *Risk of incorrect results***
   Select the type of tube you put in the tube holder.
6. Select the tests you want.
7. Tap the **Start** button.

   ⚠ **WARNING – *Risk of incorrect results***
   Do not remove or replace the tube immediately after you tapped the **Start** button.

   You can read the **Time to result** in the result link.

To add a test to an analysis in progress

1. Tap the  button in the result link of the analysis in progress.
2. Tap the **Edit** > **Parameters** buttons.
3. Select test types.

   Note: A total of five tests can be done on a sample.
4. Tap the **Start** button.

To stop a patient sample analysis

1. Tap the  button in the result link of the analysis in progress.
2. Tap the **Stop** button.
3. Tap the **OK** button.

To remove a sample tube

1. Tap **Menu** > **Remove tube**.
2. When the analyzer tells you, remove the sample tube from the inlet.
3. Tap the **OK** button.

Entering and editing data in the Patient identification screen

To change the report layout

Prerequisite(s)

- The **Patient identification** screen is open

When you change the report layout, data fields in the **Patient identificatlon** screen will change.

1. Tap the current **Report layout**.
2. Select a new layout.
3. Tap the **Select** button.

To request data automatically from external system

Prerequisite(s)

- The analyzer is connected to a LIS/HIS or AQURE/RADIANCE system
- The analyzer is set up to enable automatic requests for patient data

1. In the **Patient identification** screen, enter data in the field that was set up to enable data to be requested automatically.

   Note: It will be one of these fields: **Accession number** or **Patient ID** or **Patient account number**.

   Note: If no data is transmitted, tap the **Request** button.

To request patient data manually

Prerequisite(s)

- The analyzer is connected to a AQURE/RADIANCE system
- The analyzer is set up to enable patient data to be requested manually
- A patient sample is in the tube holder

1. In the **Patient identification** screen, choose an option and follow the steps for it.

Option	Steps
If there is a **Request** button in the screen.	**a)** Tap the **Request** button.
If there is a **Patient lookup** button in the screen.	**a)** Enter data in the **Patient department field**. **b)** Tap the **Patient lookup** button. **c)** Tap the **Update** button. **d)** Select the patient in the list. **e)** Tap the **Select** button.

To edit data in the Patient identification screen

Prerequisite(s)

- A result link to the measurement
- The result is not approved or rejected

1. Tap the  button in the result link of the analysis.
2. Tap the **Patient ID** button or tap the **Edit** > **Patient ID** buttons.
3. Edit the necessary data.
4. Tap the **Back** > **Close** buttons.

Patient results

To use a Registration Ticket

Prerequisite(s)

- The analyzer is set up to automatically print a Registration Ticket when a patient sample analysis is started

1. Go to the main screen.
2. Scan the barcode on the Registration Ticket.
   Results of the analysis appear on the analyzer screen.

To find a patient result

1. Choose an option and follow the steps for it.

Option	Steps
If there is a result link to the patient analysis	**a)** Tap the  button.
If there is no result link to the patient analysis	**a)** Tap **Menu** > **Data logs** > **Patient results log**. **b)** Select the measurement. **c)** Tap the **Result** button.

Related information
Result links, page 20

To edit Patient identification data

Prerequisite(s)

- Patient results are not approved or rejected

1. Tap the  button in the result link of the analysis.
2. Tap the **Patient ID** button.
3. Edit the necessary data.
4. Tap the **Back** > **Close** buttons.

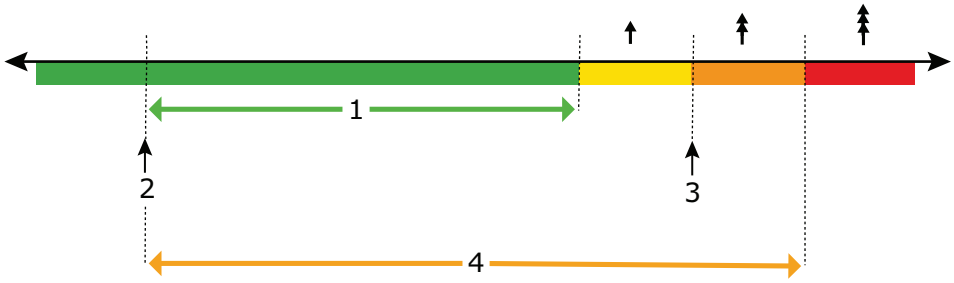
Symbols on patient results

Symbol	Description
	An error occurred. No result is available. The message attached to the result describes the error.
	Result is above the reference range but below the upper critical limit
	Result is above the upper critical limit but below the upper limit of the reportable range
> value	Result is above the given value, which is the upper limit of the reportable range

Symbol	Description
and > value	Result is above the given upper limit of the reportable range. It may indicate that the patient needs immediate attention. **Note:** The symbol is not used to mark parameters whose concentration at this level is considered to be normal, e.g. the pregnancy indicator ßhCG.
	Result is below the reference range but above the lower critical limit
	Result is below the lower critical limit but above the lower limit of the reportable range
< value	Result is below the given value, which is the lower limit of the reportable range
*	User-defined slope/offset corrections were used to calculate the result

About ranges and critical limits

Patient results are marked by symbols to show where they fall in relation to reference ranges, critical limits and reportable ranges. The diagram illustrates these relationships. Results that fall below the reportable range are not considered abnormal and are therefore shown in green.



1 Reference range

2 Lower critical limit

3 Upper critical limit

4 Reportable range

To see messages on patient results

Prerequisite(s)

- There are messages on the patient result

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Select the measurement.
3. Tap the **Result** button.
4. Tap the **Messages** button or tap the **Log** > **Messages** buttons.

To add a note to a patient result

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Select the measurement.
3. Tap the **Result** button.
4. Tap the **Messages** button.
5. Tap the **Note** button.

6. Choose an option and follow the steps for it.

Option	Steps
If a pop-up window is shown	To use one of the standard notes: **a)** Select the note. **b)** Tap the **Back** button. To enter a new note: **a)** Tap the **Edit Note** button. **b)** Enter the note.
If no pop-up window is shown	**a)** Enter a note.

7. Tap the **Back** > **Close** buttons.

Reviewing and editing patient results

To filter data from the Patient results log

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Tap the **Filter** button.
3. In the **Criteria** frame, choose an option and follow the steps for it.

Option	Steps
To select a time period prior to today's date	Tap the number button for the number of days you want
To select a start and end date	Enter data in the **Start date** and **End date** fields

4. Select the next criterion. If necessary, enter or select a value for it.
5. If more criteria are necessary, tap the **More criteria** button.
6. Do step 4 again for each criterion.
7. Tap the **Apply** button.

To see trends in a patient's results

Prerequisite(s)

- You have filtered the patient's results from the **Patient results log**

1. Tap the **Trend** button.
2. Select the parameters.
3. Tap the **View trend** button.

To see the audit trail on a patient result

Prerequisite(s)

- Changes were made to the patient result

An audit trail shows the changes made to a patient result

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Select the measurement.

3. Tap the **Result** button.
4. Tap the **Log** > **Audit trail** buttons.

   Note: The **Log** button will only be available if changes were made to the patient result.

To remove a test result from a patient result

Prerequisite(s)

- The patient result contains more than one test result
- The result is not approved or rejected

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Select the measurement.
3. Tap the **Result** > **Review** > **Deselect test** buttons.
4. Deselect the check button for the parameter.
5. Tap the **Back** > **Back** > **Close** buttons.

   Note: The result of the test is removed from the **Patient results** screen and from printed results.

About approval and rejection of patient results

Approval/rejection of patient results is not set up by default. If they are set up, results must be either approved or rejected, otherwise they will not be transmitted to a connected LIS/HIS system.

Note: An approved patient result does not indicate that the result can be used in a clinical evaluation of the patient.

Note: Patient data in approved results cannot be edited.

To approve a patient result

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Select the measurement.
3. Tap the **Result** button.
4. Tap the **Review** > **Approve** buttons.
5. If necessary, enter a note.
6. Tap the **Accept** button.
7. Tap the **Back** > **Close** buttons.

To reject a patient result

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Select the measurement.
3. Tap the **Result** button.
4. Tap the **Review** > **Reject** buttons.
5. If necessary, enter a note.
6. Tap the **Accept** button.
7. Tap the **Back** > **Close** buttons.

Replacements and maintenance 4

To order products for use with your analyzer

1. See the *AQT90 FLEX Ordering information* document for details.
2. Find the reference ordering number (REF) for the product.
3. Contact your local Radiometer representative.

Replacements

Cartridges

To find the number of remaining tests/cups in installed cartridges

1. Tap **Menu** > **Analyzer status**.
2. Tap the **Consumables** button.
3. Choose an option and follow the steps for it.

Option	Steps
To find the number of remaining tests	**a)** Select a test in the **Parameter** column.
To find the number of remaining cups (in Blank Cartridges)	**a)** Select "Blank cups" in the **Parameter** column.

Note: The number is shown in the **Remaining tests** column.

To find the on-board expiry date of cartridges

1. Tap **Menu** > **Analyzer status**.
2. Tap the **Consumables** button.
3. Tap the **Detailed inventory** button.
   The **On-board expiry date** is shown on the screen.

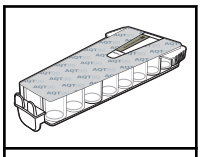
Related information
About on-board expiry date of consumables, page 16

To see the status of installed cartridges

1. Tap **Menu** > **Analyzer status** > **Consumables** > **Detailed inventory**.
2. Tap the **Back** > **Close** buttons.

To insert a cartridge

Required item(s)



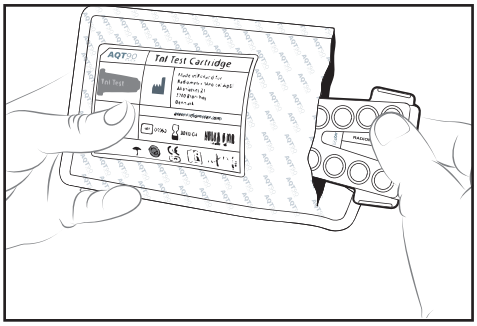
A new cartridge

⚠ **WARNING – *Risk of incorrect results***
Do not insert a cartridge that has been used on another analyzer.

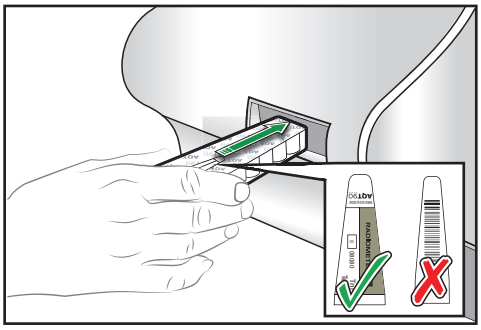
⚠ **WARNING – *Risk of incorrect results***
Cartridges are sensitive to humidity and must not be removed from their sealed pouches until just before use. Only use cartridges that have been kept according to storage specifications and are not damaged.

1. Tap **Menu** > **Analyzer status** > **Consumables** > **Insert/Replace** > **Insert/Replace cartridge**.
2. If a cartridge is ejected, remove it and dispose of it.

   Note: Cartridges are only ejected if they are used up or have passed their expiry date or on-board expiry date.
3. Remove the new cartridge from its sealed pouch.



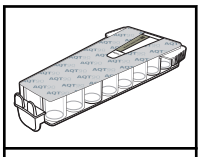
4. Hold the cartridge with its barcode pointing downwards and its narrow end in front.



5. Push the cartridge into the cartridge compartment until it clicks in place.
6. Tap the **Accept** button.
7. Tap the **Back** > **Close** buttons.

To select and replace a cartridge

Required item(s)



A new cartridge

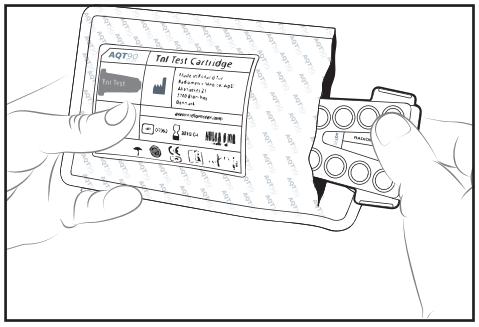
When you want to insert a cartridge and there is no space for it because the maximum number (15) of cartridges are installed and are all valid, the analyzer will tell you to do this procedure.

⚠ **WARNING – *Risk of incorrect results***
Do not insert a cartridge that has been used on another analyzer.

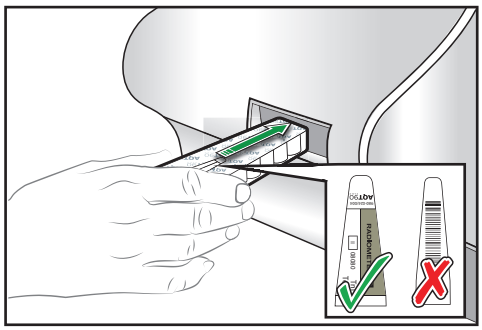
⚠ **WARNING – *Risk of incorrect results***
Cartridges are sensitive to humidity and must not be removed from their sealed pouches until just before use. Only use cartridges that have been kept according to storage specifications and are not damaged.

1. Tap **Menu** > **Analyzer status** > **Consumables** > **Detailed inventory**.
2. Select the cartridge you want to replace.
3. Tap the **Insert/replace cartridge** button.
4. Remove the ejected cartridge.

   Note: The cartridge may be used again on the SAME analyzer.
5. Remove the new cartridge from its sealed pouch.



6. Hold the cartridge with its barcode pointing downwards and its narrow end in front.



7. Push the cartridge into the cartridge compartment until it clicks in place.

8. Tap the **Accept** button.
9. Tap the **Back** > **Close** buttons.

Solution Pack

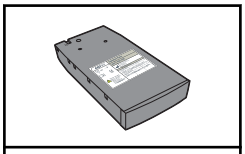
To find the cup capacity of the Solution Pack

1. Tap **Menu** > **Analyzer status**.
2. Tap the **Consumables** button.

   Note: The **Cup capacity** is shown in the **Solution Pack** field.

To replace the Solution Pack

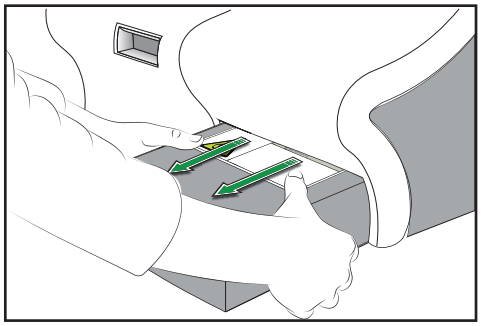
Required item(s)



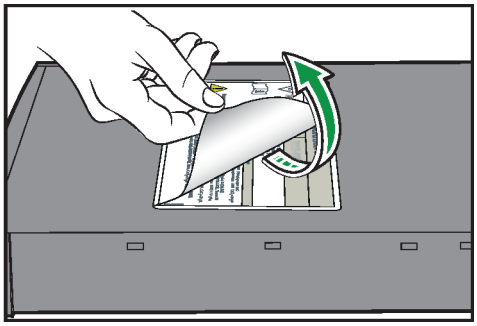
A new Solution Pack

1. Tap **Menu** > **Analyzer status** > **Consumables** > **Insert/Replace** > **Replace Solution Pack**.
2. Wait until the analyzer releases the Solution Pack.

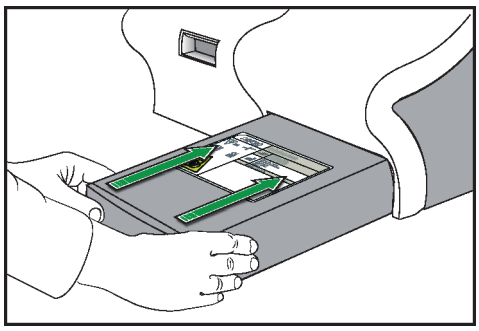
   Note: If the Solution Pack is not released, tap the **Eject** button.
3. ⚠ **WARNING – *Risk of infection***
   Remove the used Solution Pack and dispose of it as biohazardous waste.



4. Remove the top label on the new Solution Pack to show the biohazard symbol.



5. Push the new Solution Pack into the Solution Pack compartment until it clicks in place.

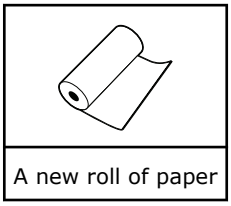


6. Tap the **Accept** button.

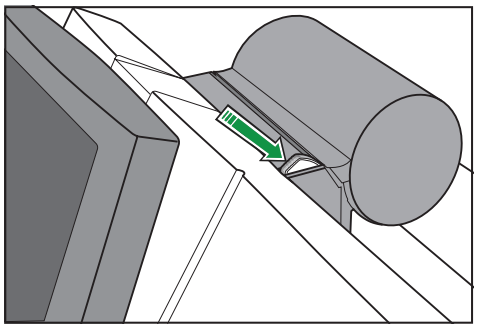
Thermal printer paper

To replace the thermal printer paper

Required item(s)



1. Press the release button.



2. Open the cover and remove the used paper roll.
3. Put in the new paper roll. Make sure it unwinds from below.
4. Make sure some paper extends out of the printer.
5. Close the cover. It must click in place.

Protection of printed data

Note: Do not expose data printed on the thermal printer paper of the analyzer to pressure, high temperatures, high humidity, direct sunlight, water, alcoholic or organic solvents, freshly-developed diazo copy sheets or materials that contain polyvinyl-chloride (PVC), and do not scratch them. Keep the printed data in polyethylene, polypropylene or polyester folders or boxes.

Maintenance

System clean

About system clean

System clean is a procedure that cleans the section of the analyzer that transports samples through the system. System-clean procedures are mandatory.

System clean frequency

The maximum number of tests between system-clean procedures is 220 tests. The analyzer sends a message to tell you when the **Warning limit** for system clean is reached (default = 200 tests). If the system-clean procedure is not done before the **Critical limit** (220 tests) is reached, the analyzer goes into **Maintenance** mode and tells you that a system-clean procedure is necessary. A system-clean procedure must be done to get the analyzer back to a **Ready** mode.

Note: The **Warning limit** can be changed in the setup, but not the **Critical limit**.

Related information

To edit the warning limits for mandatory maintenance activities, page 135

System-clean recommendations

To reduce the time it takes to start a system clean, Radiometer recommends that you do as follows:

- Replace the Solution Pack before its cup capacity falls below 2
- Keep a *valid Blank Cartridge installed at all times
- Replace the installed Blank Cartridge when the last blank cup is used

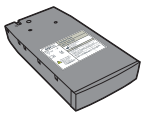
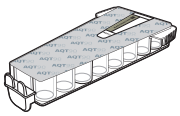
Note: *A Blank Cartridge is valid until its **On-board expiry date**.

Related information

To find the cup capacity of the Solution Pack, page 40
To find the on-board expiry date of cartridges, page 37
To find the number of remaining tests/cups in installed cartridges, page 37

To do a system clean in Ready mode

Required item(s)

		
A Cleaning Solution Tube	A Solution Pack	A Blank Cartridge

Prerequisite(s)

- The Solution Pack must have a minimum cup capacity of 2
- A *valid installed Blank Cartridge with a minimum of one remaining blank cup

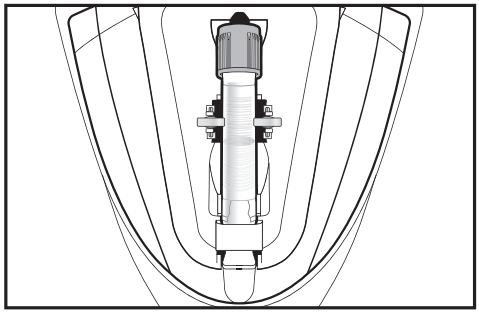
  Note: * Installed cartridges are valid until their **On-board expiry date**.

Note: Operators must have an access profile that includes permission to **Perform other activities** to do this procedure.

Use this procedure to do a system clean when the analyzer is in **Ready** mode.

1. Tap the **Introduce sample** button. If it is necessary to install a new Blank Cartridge and/or replace the Solution Pack, a pop-up message will tell you.

   Note: Operators must have an access profile that includes permission to **Perform replacements** to install a new Blank Cartridge and/or replace the Solution Pack.
2. Put the Cleaning Solution Tube into the tube holder with its cap side upwards and barcode pointing inwards. Press the tube down between the rollers.



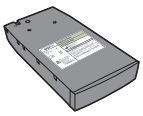
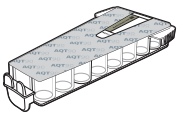
3. If necessary, enter a note.
4. Tap the **Start** button.
   You can read the **Time to result** in the result link.

Related information

To find the cup capacity of the Solution Pack, page 40
To find the number of remaining tests/cups in installed cartridges, page 37
To find the on-board expiry date of cartridges, page 37

To do a system clean in Maintenance mode

Required item(s)

		
A Cleaning Solution Tube	A Solution Pack	A Blank Cartridge

Prerequisite(s)

- The Solution Pack must have a minimum cup capacity of 2
- A *valid installed Blank Cartridge with a minimum of one remaining blank cup

  Note: * Installed cartridges are valid until their **On-board expiry date**.

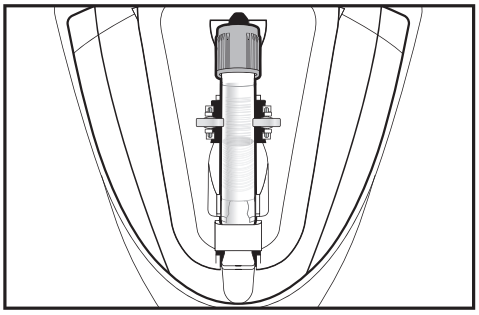
Note: Operators must have an access profile that includes permission to **Perform other activities** to do this procedure.

Use this procedure to do a system clean when the analyzer is in **Maintenance** mode.

1. Choose an option and follow the steps for it.

Option	Steps
If there is a red **Start system clean** button on the main screen	**a)** Press the button.
If there is a deactivated, green **Introduce sample** button on the main screen	**a)** Tap **Menu** > **Analyzer status** > **Other activities** > **Other activities details**. **b)** Select "System clean" in the **Maintenance schedule**. **c)** Tap the **System clean** button.

2. Put the Cleaning Solution Tube into the tube holder with its cap side upwards and barcode pointing inwards. Press the tube down between the rollers.



3. If necessary, enter a note.
4. Tap the **Start** button.
   You can read the **Time to result** in the result link.

Related information

To find the cup capacity of the Solution Pack, page 40
To find the number of remaining tests/cups in installed cartridges, page 37
To find the on-board expiry date of cartridges, page 37

To find a system-clean record

1. Tap **Menu** > **Data logs** > **System-clean log**.
2. Tap the **Close** button.

To add a note to a system-clean record

1. Tap **Menu** > **Data logs** > **System-clean log**.
2. Select the record.
3. Tap the **Note** button.
4. Enter the note.
5. Tap the **Close** button.

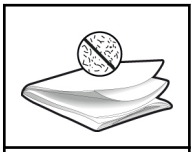
Cleaning

Blood spillage inside the analyzer

⚠ **WARNING – *Risk of electrical shock***
Do not open the analyzer for any reason. If blood is spilled inside the analyzer, contact your local Radiometer representative to get a service technician to clean it.

To clean the touch screen

Required item(s)



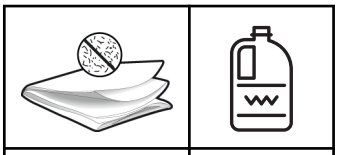
A lint-free cloth

⚠ **CAUTION – *Risk of damage to the touch screen***
Do not use liquid or aerosol cleaners to clean the touch screen.

1. Lightly dampen a lint-free cloth with water.
2. Gently wipe the screen.

To clean the analyzer exterior

Required item(s)



A lint-free cloth	A mild soap

Note: Do not use abrasive cleaning materials, or strong detergents.

1. Lightly dampen a lint-free cloth with soapy water or a mild detergent.
2. Wipe the analyzer exterior.

Disinfecting

To disinfect the touch screen

Required item(s)

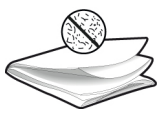
	
A lint-free cloth	A 70 % isopropyl alcohol (2-propanol)

⚠ **CAUTION – *Risk of damage to the touch screen***
Do not use liquid or aerosol cleaners to clean the touch screen.

1. Lightly dampen a lint-free cloth with a 70 % solution of isopropyl alcohol (2-propanol).
2. Gently wipe the screen.

To disinfect the analyzer exterior

Required item(s)

	
A lint-free cloth	A 70 % isopropyl alcohol (2-propanol)

1. Lightly dampen a lint-free cloth with a 70 % solution of isopropyl alcohol (2-propanol).
2. Gently wipe the analyzer exterior.

Recording an operator activity

To record an operator activity

Prerequisite(s)

- The analyzer is in one of three **Ready** modes: **Ready**, **Ready for sample registration** or **Ready for sample registration and cartridge replacement**.

This procedure lets you record an operator maintenance activity in the **Activity log**.

1. Tap **Menu** > **Analyzer status** > **Other activities** > **Other activities details**.
2. Tap in the **Operator-activities schedule** field.
3. Tap the **Log operator activity** button.
4. Select the activity you want to record.
5. Tap the **Done** button.
6. If necessary, enter other data in the **Recording operator activities** screen.
7. Tap the **Back** > **Close** buttons.

Analyzer service

About analyzer service

For service, contact your local Radiometer representative. You may have to supply the installation number (serial number) of the analyzer and the version number of the installed software.

To find the installation number (serial number) of the analyzer

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Analyzer ID**.
2. Read the installation number (serial number) on the screen.

   Note: The installation number is shown on printouts of LQC, calibration adjustment and patient results.

To find the version of software installed

1. Tap **Menu** > **Analyzer status**.
2. Read the software version in the lower left corner of the screen.

To see an overview of measurements and tests done on the analyzer

1. **Menu** > **Utilities** > **Sample counter**.

Data in the Sample counter screen

The **Sample counter** screen gives an overview of the measurements and tests done on the analyzer.

Data	Description
Parameter, **Patient samples** and **LQCs** on the left side of the screen	Shows the number of tests done for each parameter on patient samples and LQC material.
Completed column	Shows the number of completed patient sample analyses, calibration adjustments and LQC measurements. **Note:** Because a measurement can include more than one test, the total number of completed measurements will not be equal to the total number of tests.
Aborted column	Shows the number of measurements stopped by the analyzer because it found an error.
Operator column	The number of measurements done since the operator counters were last set to zero.

Note: The analyzer does not count the number of measurements with an "Interrupted" status. That is, measurements stopped by operators.

To reset the counter in the Operator column

The counter in the **Operator** column of the **Sample counter** screen is the only counter that can be reset (set to zero).

1. **Menu** > **Utilities** > **Sample counter**.
2. Tap the **Reset counters** button.

Needle replacement

Needle replacement is a mandatory maintenance activity. The **Critical limit** for needle replacement cannot be edited. The needle must be replaced before it gets to the critical limit. The critical limit is a measure of the total number of times the needle has aspirated samples from tubes since the needle was last replaced.

The needle must be replaced by a Radiometer service representative.

To find the number of times the needle has been used

1. Tap **Menu** > **Analyzer status**.
2. Tap the **Other activities** button.
3. Tap the **Other activities details** button.
4. In the **Maintenance counters** field, find the value in the **Current count** column for the "Needle replacement" activity. The value is the number of times the needle was used since the activity was last done.
5. Tap the **Close** > **Close** buttons.

To record a service inspection

Prerequisite(s)

- The analyzer is in **Ready** mode

This procedure lets you record a service inspection in the **Activity log**.

1. Tap **Menu** > **Analyzer status** > **Other activities** > **Other activities details**.
2. Tap in the **Maintenance schedule** field.
3. Tap the **Log service inspection** button.
4. Select the activity you want to record.
5. Tap the **Done** button.
6. If necessary, enter other data in the **Recording maintenance activities** screen.
7. Tap the **Back** > **Close** buttons.

Battery on the printed circuit (PC) board

⚠ **WARNING – *Risk of electrical shock***
Only let a trained technician service the battery circuit and replace the lithium battery on the PC board and only use the battery for this purpose.

To dispose of the analyzer

When the analyzer reaches the end of its life and you want dispose of it, contact your local Radiometer representative.

Quality control 5

About quality control (QC)

QC evaluates the performance of the analyzer to make sure that patient results are accurate and precise.

Quality control management

Quality control is managed by the analyzer and by operators.

QC manager	Name of the QC procedure	Description
The analyzer	Automatic test sequences (frequently referred to as built-in QC)	Tests done at regular intervals to make sure that all parts of the analyzer operate within specifications.
	Setup and apply statistical rules to LQC results. For example: Westgard Rules and RiLiBÄK rules (used in Germany). **Note:** The analyzer has to be set up to do this.	Finds unexpected shifts, trends or increased imprecision in results. Symbols on results show those that have not obeyed the rules.
Operators	Liquid quality control (LQC) measurements	Measurements done with LQC material
	LQC after calibration adjustment	Measurements done with LQC material to verify the calibration adjustment of a test lot. **Note:** These measurements are referred to as calibration verification measurements.
	System checks	Results of test sequences are recorded
	Calibration and reportable range (LCR) measurements	Measurements done with LQC material that let you verify the calibration and reportable range of measured parameters

Registration of LQC material

About registration of LQC material

Each lot of liquid quality control (LQC) material must be registered for use on the analyzer.

When Radiometer LQC material is registered, the analyzer reads data from the barcode on the tube and saves it. When non-Radiometer LQC material is registered all data must be entered manually. The saved/entered data is used to make sure LQC results

are within user-defined control ranges and put symbols on results that are not. The data is also shown in LQC plots.

Glossary of liquid quality control terms

Term	Explanation
Assigned control range	The upper and lower limits of a control range established for Radiometer LQC material. The ranges are calculated from the results of many LQC measurements done on a number of AQT90 FLEX analyzers. Measurements are done several times a day over a period of many days.
Assigned value	An assigned value is the center value of an assigned control range. **Note:** Assigned control ranges and values are given in product inserts.
User-defined control range	When Radiometer LQC material is registered, user-defined control ranges are by default given the same values as the assigned control ranges. The ranges can be changed in the setup. LQC measurements that fall within this range will have an "OK" status in the **LQC log** screen. **Note:** This range can be set to the lot-to-date range (2 SD) calculated by the analyzer.
SD	Standard deviation
Lot-to-date range	A range calculated by the analyzer. The range is based on a the number of measurements done with a specific lot of LQC material. It is the mean value ±2 SD.
N	The total number of accepted LQC results obtained for a specific parameter with a specific lot of LQC material
CV	Coefficient of variation is the ratio of standard deviation (SD) to the mean
Statistical factor	The factor which a control range is multiplied by to determine the statistical range. The recommended statistical factor is 1.5.
Statistical range	The range within which an LQC result must fall in order to be included in the LQC statistics. It is determined by multiplying the control range limits by the statistical factor. When the recommended statistical factor of 1.5 is used, the statistical range will be the mean ±3 SD.
Month-to-date	For each lot of LQC material **Month-to-date** values are calculated for **N**, **Mean**, **2SD** and **CV**
Accepted result	An LQC result that falls within the statistical range

Data saved during registration of LQC material

Data saved on the analyzer during registration of LQC material:

- **Position** – The registration number
- **Solution** – The generic name of the material. Non-Radiometer LQC material is given the name **Non-R-** followed by a number.
- **LQC name** – The name you can give to LQC material. By default, it is given the same name as the **Solution**.
- **Lot number**
- **Expiry date**

- Parameters to measure
- **Assigned** control range of each parameter
- **User-defined** control range of each parameter

  Note: By default, the **User-defined** control range is given the same values as the **Assigned** control range. However, the values can be edited.

This data is entered automatically during registration of Radiometer LQC material but must be entered manually during registration of Non-Radiometer LQC material.

To register Radiometer LQC material

Prerequisite(s)

- The *Specifications* insert supplied with the LQC material is available

You must register each lot of LQC material before you can use it.

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Make sure the number selected in the **Position** column contains no data.

   Note: The number can be thought of as a registration number.
3. Scan or enter the barcodes on the *Specifications* insert.
4. Tap the **Accept** button.
5. Tap the **Close** button.

To register non-Radiometer LQC material

Prerequisite(s)

- For the LQC material, this data must be available:
  - Name
  - Lot number
  - Expiry date
  - The parameters to be measured
  - The manufacturer's control range for each parameter on the AQT90 FLEX analyzer

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Make sure the number selected in the **Position** column contains no data.

   Note: This number can be thought of as a registration number.
3. Tap the **Add Non-R-** button.
4. Enter a name for the LQC material.
5. Enter the lot number of the LQC material.
6. Enter the expiry date of the LQC material as follows:

   a) Tap the button with the calendar icon adjacent to the **Expiry date** field.
   b) Use the format shown to type in the date.
   c) Tap the **Back** button.
7. Select the parameter to measure.
8. Tap the **Edit (2)** button.

9. Enter the control ranges for the parameter as follows:
   a) In the **Assigned:** fields, enter the lower and upper limits of the manufacturer's control range on the AQT90 FLEX analyzer for the parameter.

      Note: The values must be within the reportable range for the parameter on the AQT90 FLEX analyzer[1].
   b) In the **User-defined:** fields, enter the lower and upper limits of the user-defined range for the parameter.

      Note: The entered values must be within the limits entered for the parameter in the **Assigned:** fields.
10. To measure the parameter, deselect the **Exclude parameter** check button.
11. If necessary, tap the **Next Param.** or **Prev. Param.** button to select a new parameter and do steps 7 to 11 again.
12. Tap the **Back** > **Back** > **Close** buttons.

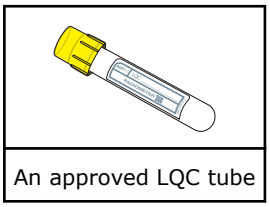
Liquid quality control (LQC) measurements

Frequency of liquid quality control (LQC) measurements

Do LQC measurements as often as local, national and/or international regulations or accreditation organizations require them to be done.

To analyze Radiometer LQC material

Required item(s)



An approved LQC tube

Prerequisite(s)

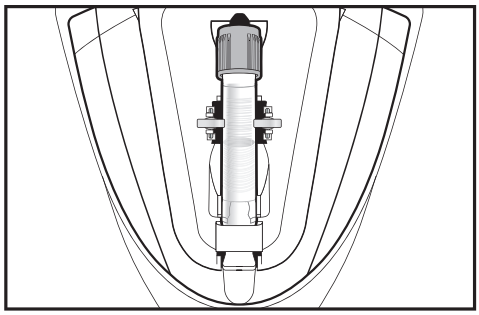
- The LQC material is approved for use with the analyzer
- The LQC material is registered on the analyzer
- The analyzer is in **Ready** mode, **Ready for sample registration** mode, **Ready for sample registration and cartridge replacement** mode or in **QC locked** mode

1. ⚠ **WARNING – *Risk of incorrect results***
   Prepare the LQC material for use. Follow the manufacturer's instructions.
2. Tap the **Introduce sample** button.

   Note: If there is a tube in the inlet, remove it.

[1] See the AQT90 FLEX parameter-specific Test Kit inserts for details

3. Put the LQC tube into the tube holder with its cap side upwards and barcode pointing inwards. Press the tube down between the rollers.



The analyzer reads the barcode and shows details about the LQC material on the screen.

4. Tap the **Accept** button.
The screen shows the parameters that will be measured.
5. Tap the **Start** button.
You can read the **Time to result** in the result link.

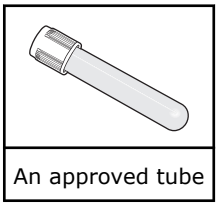
Related information
To register Radiometer LQC material, page 53

LQC material

Radiometer recommends that Radiometer liquid quality control products are used. See the *AQT90 FLEX Ordering information* document for details.

To analyze non-Radiometer LQC material

Required item(s)



An approved tube

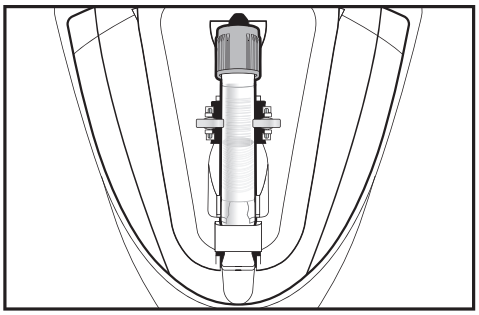
Prerequisite(s)

- An approved tube containing the LQC material that has been prepared for use
- The non-Radiometer LQC material is registered for use on the analyzer
- The analyzer is in **Ready** mode, **Ready for sample registration** mode, **Ready for sample registration and cartridge replacement** mode or in **QC locked** mode

1. Tap the **Introduce sample** button.

   Note: If there is a tube in the inlet, remove it.
2. Tap the **LQC ID** button.

3. Put the tube into the tube holder with its cap side upwards. Press the tube down between the rollers.



4. Make sure the **Position: Name** field is selected.
5. Select the LQC material from the list on the right of the screen.

   Note: LQC material is identified by a registration number, **Non-R-**, an **LQC name** and a **Lot no.**.
6. Tap the **Select** button.
7. If necessary, enter a note.
8. Tap the **Accept** button.
9. Tap the **Start** button.
   You can read the **Time to result** in the result link.

Related information
To register non-Radiometer LQC material, page 53

To stop an LQC measurement

1. Tap the  button in the result link of the LQC measurement in progress.
2. Tap the **Stop** button.
3. Tap the **OK** button.

LQC results

To find an LQC result

1. Tap **Menu** > **Data logs** > **QC logs** > **LQC log**.
2. Select the measurement.
3. Tap the **Result** button.

Symbols on LQC results

Symbol	Description
	An error occurred. No result is available.
	The result is outside the user-defined control range, but inside the statistical range. Results inside the statistical range are included in statistics.
	The result is outside the statistical range. The result is not included in statistics.
	The result is outside the reportable range. The result is not included in statistics.

Symbol	Description
*	User-defined slope/offset corrections were used to calculate the result
W	The result violates a Westgard rule
R	The result violates a RiliBÄK rule

To see messages on an LQC measurement result

1. Tap **Menu** > **Data logs** > **QC logs** > **LQC log**.
2. Select the measurement.
3. Tap **Result** > **Messages**.

Reviewing LQC results

To filter data from the LQC log

1. Tap **Menu** > **Data logs** > **QC logs** > **LQC log**.
2. Tap the **Filter** button.
3. In the **Criteria** frame, choose an option and follow the steps for it.

Option	Steps
To select a time period prior to today's date	Tap the number button for the number of days you want.
To select a start and end date	Enter data in the **Start date** and **End date** fields.

4. Select the next criterion. If necessary, enter or select a value for it.
5. Do step 4 again for each criterion.
6. Tap the **Apply** button.

To see trends in LQC results

Prerequisite(s)

- You have filtered data from the **LQC log**

1. Tap the **Trend** button.
2. Select the parameters.
3. Tap the **View trend** button.

LQC statistics

To find and print LQC statistics

Prerequisite(s)

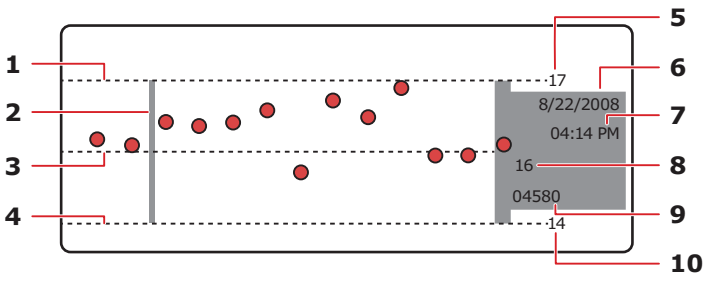
- LQC results are within the statistical ranges

1. Tap **Menu** > **Data logs** > **QC logs** > **LQC log**.
2. Tap the **Statistics** button.
3. Tap the **Next param.** or **Prev. param.** button to see statistics for other parameters.

4. Tap the **Print** button.
5. Tap either the **Print lot-to-date** or the **Print for monthly period** button.
6. Tap the **Print** button.

LQC plots

LQC plots are Levey-Jennings plots that show LQC results done with registered LQC material. Results are shown on a horizontal axis that represents the time LQC measurements were done.



1	2 SD (standard deviations) above the mean value	**6**	Date
2	Lot number of the LQC material or the user-defined control range was changed	**7**	Time
3	Mean value	**8**	LQC measurement result
4	2 SD (standard deviations) below the mean value	**9**	Lot number of the LQC material used
5	Upper limit of the user-defined control range	**10**	Lower limit of the user-defined control range

To find an LQC plot

1. Tap **Menu** > **Data logs** > **QC logs** > **LQC log**.
2. Tap a measurement with the **Test type** "LQC".
3. Tap the **Plot** button.
4. If necessary, tap the **Next position** button to see plots for other registered LQC material.
5. Tap the **Next Param.** or **Prev. Param.** button to see the plots for other parameters.
6. To see other measurements in a plot, do as follows:

   a) Tap in the field of the plot.
   b) Use the left and right arrow buttons to select other measurements in the plot.

Symbols on LQC plots

Symbol	Description
	The result is outside the user-defined control range, but inside the statistical range. The result is included in the LQC statistics.
	The result is outside the user-defined control range and the statistical range. The result is not included in the LQC statistics.

Symbol	Description
	The result is outside the reportable range.

Calibration verification

About the 2 calibration-verification methods

Regulatory compliance differs from country to country. On the analyzer, 2 calibration-verification methods are available:

- Method 1 – lets you verify that the new lot of installed test cartridges gives LQC results comparable to those obtained with previous test lots. These are the measurements that must be done after a calibration adjustment.
- Method 2 – is part of the process called calibration verification in the USA, which lets you verify the calibration and reportable range of parameters.

Method 1 - LQCs after calibration adjustments

About LQCs done after a calibration adjustment

LQC measurements done after a calibration adjustment let you verify that the new lot of installed test cartridges, which are calibration adjusted, give results that are comparable to those obtained with previous test lots.

Note: In the software, these measurements are referred to as calibration-verification measurements.

Frequency of LQC after calibration adjustments

LQC must be done after each calibration adjustment of a test lot.

To do an LQC after a calibration adjustment

Prerequisite(s)

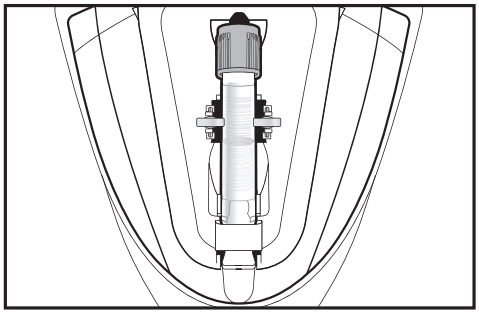
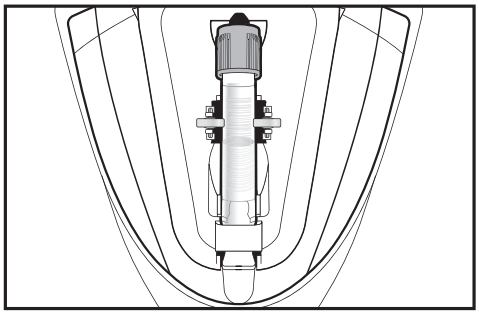
- Radiometer LQC material or non-Radiometer LQC material is available
- The LQC material is registered for use
- The analyzer is in one of three **Ready** modes: **Ready**, **Ready for sample registration** or **Ready for sample registration and cartridge replacement**.

Note: The measurement done during this procedure is referred to as calibration-verification measurement.

1. ⚠ **WARNING – *Risk of incorrect results***
   Prepare the LQC material for use. Follow the manufacturer's instructions.
2. Tap the **Introduce sample** button.

   Note: If there is a tube in the inlet, remove it.

3. Choose an option and follow the steps for it.

Option	Steps
For Radiometer LQC material	**a)** Put the tube into the tube holder with its cap side upwards and barcode pointing inwards. Press the tube down between the rollers. 
For non-Radiometer LQC material	**a)** Tap the **LQC ID** button. **b)** Put the tube into the tube holder with its cap side upwards. Press the tube down between the rollers.  **c)** Make sure the **Position: Name** field is selected. **d)** Select the LQC material from the list on the right of the screen. **Note:** Material is identified by a registration number, **Non-R-**, an **LQC name** and a **Lot no.** **e)** Tap the **Select** button.

4. For **Test type**, select "Cal.verification".
5. Enter the necessary data on the **LQC identification** screen.
6. If necessary, enter a note.
7. Tap the **Accept** button.
8. Select the test lots you want to use for the measurement.

   Note: A maximum of 5 test lots can be selected. This is the maximum number of times the rubber septum of a sample tube can be pierced without risking septum disintegration, resultant sample contamination and incorrect results.
9. Tap the **Start** button.
   You can read the **Time to result** in the result link.

Related information

To register Radiometer LQC material, page 53
To register non-Radiometer LQC material, page 53

To find and print LQC done after a calibration adjustment

Note: LQCs done after calibration adjustment are referred to as calibration-verification measurements.

1. Tap **Menu** > **Data logs** > **QC logs** > **LQC log**.
2. Tap the **Filter** button.
3. In the **Criteria** frame, choose an option and follow the steps for it.

Option	Steps
To select a time period prior to today's date	Tap the number button for the number of days you want
To select a start and end date	Enter data in the **Start date** and **End date** fields

4. For **Test type**, select **Cal.verification**.
5. Tap the **Apply** button.
6. Select the measurement.
7. Tap the **Result** button.
8. Tap the **Print** button.
9. Tap the **Back** > **Close** buttons.

Symbols on LQCs done after a calibration adjustment

Note: LQCs done after calibration adjustment are referred to as calibration-verification measurements.

Symbol	Description
	An error occurred. No result is available.
	The result is outside the user-defined control range. The result is not included in the statistics.
	The result is outside the reportable range. The result is not included in the statistics.
*	User-defined slope/offset corrections were used to calculate the result

Method 2 - The calibration-verification process

About calibration verification (in the USA)

In the USA and some other countries, regulations require calibration verification. Calibration verification is a process that lets you verify the calibration and reportable range of the parameters measured by the analyzer.

The calibration-verification process includes these activities:

- Analyze as patient samples a minimum of 3 different levels of LQC material. One level must be near the lower limit of the reportable range, one near the upper limit of the reportable range, and one in between.

  Note: On the analyzer, these measurements are referred to as calibration verification and reportable range (LCR) measurements.
- Use the LCR measurement results to verify the calibration and reportable range of the measured parameters. Follow your local, state and federal guidelines.

Note: If it is necessary to change the reportable range, it can be done.

Related information

To set up reportable ranges, page 116

Frequency of calibration verification

Calibration verification is usually done every six months and when one or more of these conditions apply:

- After maintenance or an activity that may have an effect on test performance
- If daily LQC measurements show unusual trends and shifts or results are outside acceptable limits
- If your laboratory rules that calibration verification must be done more frequently.

To create a report layout for LCR measurements

The person who does this procedure must have an access profile that permits access to the **Patient reports** screen. This procedure tells you how to create a report layout that includes "Measurement type". This type of report layout is necessary in order to do LCR measurements.

1. Log on to the analyzer.
2. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Patient reports**.
3. Tap the **New** button.
4. Select "Patient ID" from the list in the **Available items** field.
5. Tap the  button.
6. Select "Measurement type" from the list in the **Available items** field.
7. Tap the  button.
8. Select "Operator" from the **Available items** field.
9. Tap the  button.
10. Tap the **Back** button.
11. In the **Name** field, enter 'LCR report' or similar text so operators will know that this is the report layout to be used for LCR measurements.
12. Tap the **Edit patient results layout** button.
13. Select a parameter from the list in the **Available items** field.
14. Tap the  button.
15. Do steps 12 and 13 again until each parameter that the analyzer is used to measure is in the **Selected items** field.
16. Tap the **Back** button.
17. Tap the **Close** button.

Related information

Report layout for LCR measurements, page 121

STAGE 1: To do LCR measurements

Prerequisite(s)

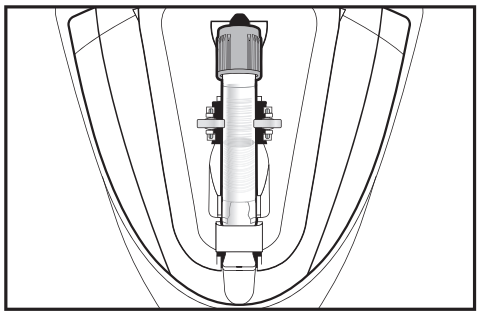
- A report layout includes "Measurement type"
- A minimum of three levels of LQC material is available

  Note: One level must be near the lower limit of the reportable range, one near the upper limit of the reportable range, and one in between.
- The analyzer is in one of three **Ready** modes: **Ready**, **Ready for sample registration** or **Ready for sample registration and cartridge replacement**.

Note: LCR measurements require LQC material to be analyzed as patient samples.

1. ⚠ **WARNING – *Risk of incorrect results***
   Prepare the LQC material for use. Follow the manufacturer's instructions.
2. Tap the **Introduce sample** button.

   Note: If there is a tube in the inlet, remove it.
3. Put the tube into the tube holder with its cap side upwards. Press the tube down between the rollers.



4. Tap the current **Report layout**.
5. Select the report layout created for LCR measurements.
6. For **Measurement Type**, select "Cal.verif. sample".
7. In the **Patient ID** field, enter the name, level and lot number of the LQC material. IMPORTANT: Do not enter more than 20 characters.

   Note: Characters after the 20th character will not be sent to a connected LIS/HIS/data management system.
8. If necessary, enter other data in the **Patient identification** screen.

   Note: You must enter data in fields with this icon: 
9. Tap the **Accept** button.
10. Select the test lots to use for the measurement.

    Note: A maximum of 5 test lots can be selected. This is the maximum number of times the rubber septum of a sample tube can be pierced without risking septum disintegration, resultant sample contamination and incorrect results.
11. Tap the **Start** button.
    You can read the **Time to result** in the result link.
12. Do steps 1-11 again for the LQC material.
13. Analyze each level of LQC material in duplicate using steps 1-11.

Related information
Report layout for LCR measurements, page 121

To find an LCR measurement result

1. Tap **Menu** > **Data logs** > **Patient results log**.
2. Tap the **Filter** button.
3. In the **Criteria** frame, choose an option and follow the steps for it.

Option	Steps
To select a time period prior to today's date	Tap the number button for the number of days you want
To select a start and end date	Enter data in the **Start date** and **End date** fields

4. Choose an option and follow the steps for it.

Option	Description
If **Measurement type** is visible	• Select "LCR sample".
If **Measurement type** is not visible	• Tap the **More criteria** button. • Select **Measurement type**. • For **Measurement type**, select "LCR sample".

5. Tap the **Apply** button.
6. Select the measurement.
7. Tap the **Result** button.

Symbols on LCR measurement results

The symbols used on LCR results are the same as the symbols used on patient results.

System check

About system check

System check is a series of automatic test sequences that can be done on request by the analyzer or scheduled to be done automatically. System-check results are saved in the **System-check log**. Results show the status of the test sequences. Results can be printed and/or exported as comma-separated files.

Note: No sample is necessary to do a system check.

Differences between system check and built-in QC

The table shows the differences between built-in QC and system check.

Properties	System check	Built-in QC
Set up by default	No	Yes
Scheduled to be done automatically	No, but can be	Yes
Includes tests done with a sample	No	Yes

Properties	System check	Built-in QC
Errors will stop use of the analyzer	No	Yes
Schedule can be changed	Yes	No
Can be done on demand	Yes	No
Results are recorded in a log	Yes	Only if results fail
Results can be printed	Yes	No
Results can be exported	Yes	No

To request an automatic system check

Prerequisite(s)

- The analyzer is in **Ready** mode

1. Tap **Menu** > **Analyzer status**.
2. Tap the **QC** button.
3. Tap the **Start system check** button.
4. Choose an option and follow the steps for it.

Option	Steps
To start a system check immediately	• Tap the **OK** button.
To delay the start by 30 minutes	• Tap the **Cancel** button.

To find system-check results

1. Tap **Menu** > **Data logs** > **QC logs** > **System-check log**.
2. Select the system check.
3. Tap the **Result** button.

   Note: If a test fails, a message is attached to the result.
4. Tap the **Back** > **Close** buttons.

To see messages on a system-check result

1. Tap **Menu** > **Data logs** > **QC logs** > **System-check log**.
2. Select the system check.
3. Tap the **Result** > **Messages** buttons.

Calibration adjustment 6

Calibration adjustment

A calibration adjustment adjusts factory-defined calibration data to a specific analyzer. The calibration adjustment makes sure that measurement results are accurate and reliable.

Frequency of calibration adjustment

Do a calibration adjustment:

- Before Test Cartridges with a new lot number are used
- In accordance with local, national and/or international regulations or accreditation requirements

Pending and active calibration adjustments

Status of calibration adjustments

Status of a calibration adjustment	Explanation
Pending	Calibration adjustment of the test lot has not been done. **Note:** If the **Status** value is "in queue" it shows that the CAL Cartridge is installed but the calibration adjustment procedure was not started.
Active	Calibration adjustment was done for this test lot

To find the status of calibration adjustments

1. Tap **Menu** > **Analyzer status**.
2. Tap the **Cal.adjust.** button.
   The screen shows the test lots with a "Pending" status.
3. To see test lots with an "Active" status, tap the **Active cal. adjust.** button.
4. To see the details of an active calibration adjustment:
   a) Select an active test lot.
   b) Tap the **Cal. adjust. details** button.
5. Tap the **Back** > **Back** > **Close** buttons.

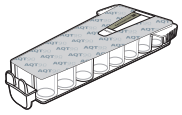
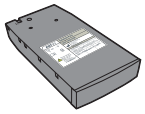
To see and print active calibration adjustments

1. Tap **Analyzer status** > **Cal.adjust.**.
2. Tap the **Active Cal. adjust.** button.
3. Tap the **Print** button.

Doing calibration adjustments

To do a calibration adjustment

Required item(s)

	
A new CAL Cartridge	A Solution Pack

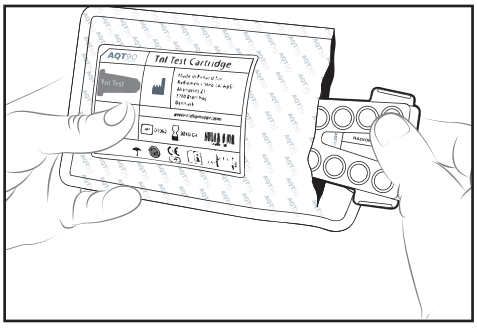
Prerequisite(s)

- The Solution Pack must have a minimum **Cup capacity** of 16
- A CAL Cartridge in a sealed pouch
- The *Factory-defined calibration data* sheet in the Test Kit or CAL Cartridge box is available

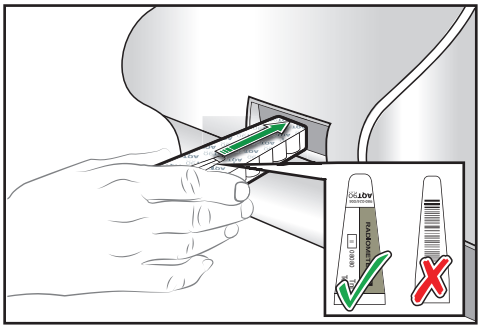
⚠ **WARNING – *Risk of incorrect results***
Do not insert a cartridge that has been used on another analyzer.

⚠ **WARNING – *Risk of incorrect results***
Cartridges are sensitive to humidity and must not be removed from their sealed pouches until just before use. Only use cartridges that have been kept according to storage specifications and are not damaged.

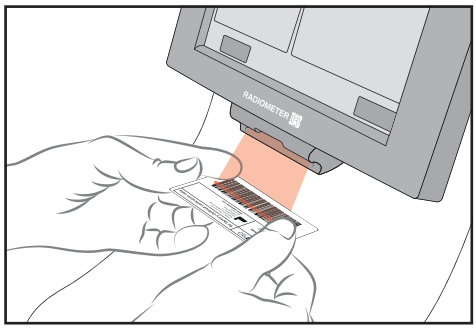
1. Tap **Menu** > **Analyzer status** > **Consumables**.
2. Tap the **Insert/Replace** > **Insert/replace cartridge** buttons.
3. Remove the new CAL Cartridge from the sealed pouch.



4. Hold the cartridge with its barcode pointing downwards. Push the cartridge into the cartridge compartment until it clicks in place.



5. Scan the barcode on the *Factory-defined calibration data* sheet.



Note: This step is not necessary if calibration adjustment of the test lot has been done before.

6. Tap the **Accept** button.
7. Tap the **Start cal. adjust.** button.
8. Tap the **OK** button to start the calibration adjustment or tap the **Cancel** button to delay the start by 30 minutes.
   You can read the **Time to result** in the result link.

Post-requisite: Do LQC measurements with the test lot that has just been calibration adjusted. Follow local, national and/or international regulations or accreditation requirements.

Related information

To find the cup capacity of the Solution Pack, page 40
To do an LQC after a calibration adjustment, page 59

To invalidate an active calibration adjustment

Prerequisite(s)

- A test lot that is calibration adjusted

It is necessary to do this procedure before you do a calibration adjustment again on a test lot that has already been calibration-adjusted.

Note: The procedure permanently removes the active calibration adjustment data for the selected test lot.

1. Tap **Menu** > **Analyzer status** > **Cal.adjust.**.
2. Tap the **Active cal.adjust** button.
3. In the **Test type** column, select the test type of the cartridge lot.
4. Tap the **Invalidate cal.adjust.** button.
5. Tap the **OK** button.
6. Tap the **Back** > **Close** buttons.

To do the calibration adjustment of a test lot again

Prerequisite(s)

- A calibration adjusted test lot is available

1. Invalidate the active calibration adjustment for the test lot before you do a calibration adjustment again on a test lot that has already been calibration adjusted.
2. Do a calibration adjustment of the test lot.

To do an in-queue calibration adjustment

Prerequisite(s)

- The installed CAL Cartridge has an "in queue" pending status

1. Tap **Menu** > **Analyzer status** > **Consumables**.
2. Tap the **Start cal. adjust**. button.
3. Tap the **OK** button to start the calibration adjustment or tap the **Cancel** button to delay the start by 30 minutes.
   You can read the **Time to result** in the result link. If the procedure fails, do the procedure again.

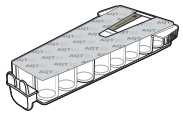
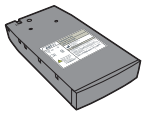
Post-requisite: Do LQC measurements with the test lot that has just been calibration adjusted. Follow local, national and/or international regulations or accreditation requirements.

Related information

To do an LQC after a calibration adjustment, page 59

To do a pending calibration adjustment

Required item(s)

	
A new CAL Cartridge	A Solution Pack

Prerequisite(s)

- The Solution Pack must have a minimum **Cup capacity** of 16
- A CAL Cartridge in a sealed pouch

⚠ **WARNING – *Risk of incorrect results***
Do not insert a cartridge that has been used on another analyzer.

⚠ **WARNING – *Risk of incorrect results***
Cartridges are sensitive to humidity and must not be removed from their sealed pouches until just before use. Only use cartridges that have been kept according to storage specifications and are not damaged.

1. Tap **Menu** > **Analyzer status** > **Cal.adjust**.
2. In the **Pending calibration adjustments** field, select the parameter you want.
3. Tap the **Cal.adjust. details** button.
4. Tap the **Consumables** button.
5. Tap the **Start cal. adjust** button.
6. Tap the **OK** button to start the calibration adjustment or tap the **Cancel** button to delay the start by 30 minutes.
   You can read the **Time to result** in the result link.

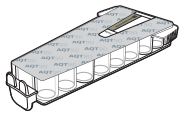
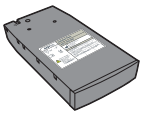
Post-requisite: Do LQC measurements with the test lot that has just been calibration adjusted. Follow local, national and/or international regulations or accreditation requirements.

Related information

To find the cup capacity of the Solution Pack, page 40
To do an LQC after a calibration adjustment, page 59

To do a number of calibration adjustments

Required item(s)

	
A new CAL Cartridge for each new lot	A Solution Pack

Prerequisite(s)

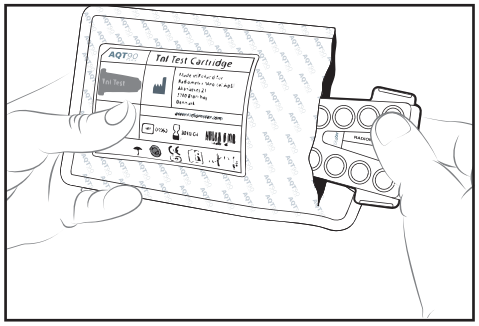
- The Solution Pack must have a minimum **Cup capacity** of 16 for each calibration adjustment
- A CAL Cartridge in a sealed pouch for each test lot
- The *Factory-defined calibration data* sheet in the Test Kit or CAL Cartridge box is available
- Active calibration adjustments are invalidated for each test lot

⚠ **WARNING – *Risk of incorrect results***
Do not insert a cartridge that has been used on another analyzer.

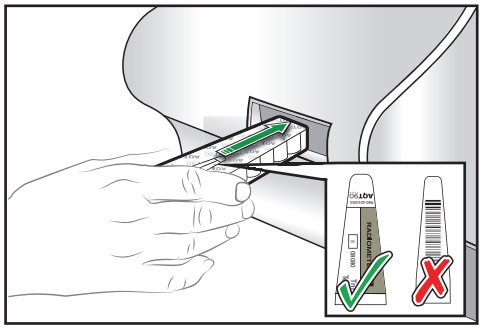
⚠ **WARNING – *Risk of incorrect results***
Cartridges are sensitive to humidity and must not be removed from their sealed pouches until just before use. Only use cartridges that have been kept according to storage specifications and are not damaged.

This procedure explains how to do a number of calibration adjustments one after the other.

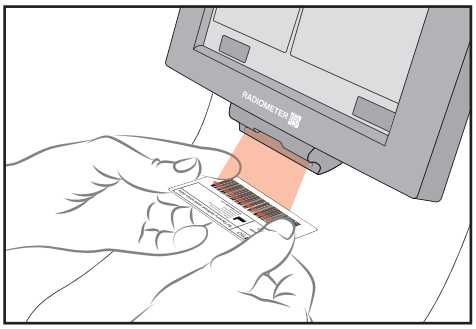
1. Tap **Menu** > **Analyzer status** > **Consumables**.
2. Tap **Insert/Replace** > **Insert/replace cartridge**.
3. Remove a CAL Cartridge from its pouch.



4. Hold the cartridge with its barcode pointing downwards. Push the cartridge into the cartridge compartment until it clicks in place.



5. Scan the barcode on the *Factory-defined calibration data* sheet.



Note: You can find the sheet in the Test Kit or CAL Cartridge box.

6. Tap the **Accept** button.
7. Do steps 2 to 6 for each CAL Cartridge.
8. Tap the **Start cal. adjust.** button.
9. Tap the **Close** button.
10. Tap the **OK** button to start the procedure or tap the **Cancel** button to delay the start by 30 minutes.
    You can read the **Time to result** for each test lot in the result link.

Post-requisites: Do LQC measurements after calibration adjustment. For measurements, select the test lots that have just been calibration adjusted. Follow local, national and/or international regulations or accreditation requirements.

Related information

To find the cup capacity of the Solution Pack, page 40
To do an LQC after a calibration adjustment, page 59

To stop a calibration adjustment

1. Tap the  button in the result link to the calibration adjustment that is in progress.
2. Tap the **Stop** button.
3. Tap the **OK** button.

Calibration adjustment results

To find results of a calibration adjustment

1. Tap **Menu** > **Data logs** > **Cal.adjustment log**.
2. Select the calibration adjustment.
3. Tap the **Result** button.
4. Tap the **Back** > **Close** buttons.

To see messages on a calibration adjustment result

1. Tap **Menu** > **Data logs** > **Cal.adjustment log**.
2. Select the calibration adjustment.
3. Tap the **Result** button.
4. Tap the **Messages** button.
5. Tap the **Back** > **Back** > **Close** buttons.

Reviewing calibration adjustment results

To filter data from the Cal.adjustment log

1. Tap **Menu** > **Data logs** > **Cal.adjustment log**.
2. Tap the **Filter** button.
3. In the **Criteria** frame, choose an option and follow the steps for it.

Option	Steps
To select a time period prior to today's date	Tap the number button for the number of days you want
To select a start and end date	Enter data in the **Start date** and **End date** fields

4. Select the next criterion. If necessary, enter or select a value for it.
5. Do step 4 again for each criterion.
6. Tap the **Apply** button.
7. Tap the **Close** button.

To see trends in the calibration adjustment log

Prerequisite(s)

- You have filtered data from the **Cal.adjust. log**

1. Tap the **Trend** button.
2. Tap the **Back** > **Close** buttons.

Troubleshooting 7

To get back to a "Ready" mode

Operating mode	To get back to a “Ready” mode
Busy	**1.** Wait 10 to 120 minutes.
Error	**1.** Read the system messages in the **Analyzer status** screen. **2.** Troubleshoot the messages. **3.** Restart the analyzer. **4.** If the mode does not change, contact your local Radiometer service representative.
Locked	**1.** Read the messages in the **Analyzer status** screen. **2.** Troubleshoot the message.
Locked - QC pending	**1.** Do the scheduled LQC measurements.
Maintenance	**1.** Do the scheduled maintenance activities.
Not operational	**1.** Wait.
Not operational Automatic recovery in progress. Please wait.	**1.** Wait 2 to 6 minutes.
Replacement	**1.** Read the **Consumables** messages in the **Analyzer status** screen to find the root cause. **2.** Replace the consumables.
Service	**1.** Contact your local Radiometer representative.
Shutdown	**1.** Wait until Windows shuts down. **2.** Push the power switch to the *On* (—) position. **3.** If the mode does not change to **Ready**, contact your local Radiometer representative.
Startup	**1.** Wait. The mode changes to **Not operational** before it changes to a **Ready** mode.

Message types

The analyzer makes two types of message.

- Messages that tell you about conditions that require some action.
- Messages that supply information, but do not require any action.

To troubleshoot messages

1. Note the message number.
2. Find the message in the messages table.
3. Follow the actions given in the operator actions column.

Messages

Messages in the table are sorted by number. Operator actions tell you how to troubleshoot messages. Messages with no operator actions only provide explanations.

No.	Message	Explanation	Operator actions
1	Inconsistent software versions	The versions of the installed software modules are inconsistent.	Contact your local Radiometer service representative.
2	Inconsistent analyzer system software	The versions of the installed software modules are inconsistent.	Contact your local Radiometer service representative.
83	Value above reference range	The result is above the user-defined reference range.	
84	Value below reference range	The result is below the user-defined reference range.	
85	Value is below the critical limit	The result is below the user-defined critical limit.	
86	Value is above the critical limit	The result is above the user-defined critical limit.	
89	Measured value above upper limit of the user-defined control range	The LQC or calibration-verification result is above the upper limit of the user-defined control range.	Follow local procedures to troubleshoot this type of error.
90	Measured value below lower limit of the user-defined control range	The LQC or calibration-verification result is below the lower limit of the user-defined control range.	Follow local procedures to troubleshoot this type of error.
93	Value above the reportable range	The result is above the reportable range of the parameter.	
94	Value below the reportable range	The result is below the reportable range of the parameter.	
117	Invalid connection configuration	Either the communication configuration or the protocol definition is invalid for the data management system.	Make sure the values set in the communication setup are correct.
118	LIS/HIS: Connection manager could not open high level protocol	Either the communication setup or the protocol definition is not valid.	**1.** Make sure the values set in the communication setup are correct. **2.** Restart the analyzer.

No.	Message	Explanation	Operator actions
128	Failed to open connection	Either the communication hardware was busy or the remote system did not respond.	**1.** Try to open the connection again. **2.** Make sure that there is enough buffer capacity on the remote system. **3.** If the message stays, check the communication hardware.
129	Failed to close connection	The connection between the analyzer and the remote system failed. Some data may be missing.	**1.** Make sure that the remote system is running and responding. **2.** Check the communication cables and other hardware. **3.** Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Communications** > **LIS/HIS connection**. **4.** Tap the button in the **Output queue** frame. **Note:** This will delete messages in the queue. **5.** Tap the **Close** button.
131	Failed to send packet	Data from the analyzer was not sent because of a communication error.	
132	Failed to receive packet	Data from the remote system was not received because of a communication error.	**1.** Check that protocol types are correctly configured on both the analyzer and the remote system. **2.** If the message stays, contact your local Radiometer service representative.
133	Connection lost	The connection between the analyzer and the LIS/HIS system failed.	**1.** Make sure that the remote system is running and responding. **2.** Check the communication cables.
134	Connection established	The connection was successfully established.	
165	High-level protocol could not generate high level packet	An error occurred while formatting a message.	**1.** Check that protocol configurations. **2.** If the message stays, contact your local Radiometer service representative.
166	General communication error	An internal error occurred in the LIS/HIS communication module.	If the message stays, contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
167	LIS/HIS: High level protocol received packet in wrong format	An error occurred while parsing (interpreting) a message.	**1.** Check that protocol configurations. **2.** If the message stays, contact your local Radiometer service representative.
200	Operator message:	An operator entered a note in the activity log.	
201	Westgard Rule (1-2s) violation	One measurement exceeds 2 SDs.	Follow local procedures to troubleshoot this type of error.
202	Westgard Rule (1-3s) violation	One measurement exceeds 3 SDs.	Follow local procedures to troubleshoot this type of error.
203	Westgard Rule (2-2s) violation	Two consecutive measurements exceed 2 SDs (same side).	Follow local procedures to troubleshoot this type of error.
204	Westgard Rule (R-4s) violation	The difference between two consecutive measurements exceeds 4 SDs.	Follow local procedures to troubleshoot this type of error.
205	Westgard Rule (4-1s) violation	Four consecutive measurements exceed the same 1 SD.	Follow local procedures to troubleshoot this type of error.
206	Westgard Rule (10-x) violation	Ten consecutive measurements lie on the same side of the mean.	Follow local procedures to troubleshoot this type of error.
208	LQC schedule reminder(s) present for solution <*Solution name*>	A scheduled LQC measurement (with the named QC material) is pending.	Do the pending LQC measurement.
210	Calibration adjustment error(s) present	An error was registered during the last calibration adjustment of a parameter.	**1.** Tap **Menu** > **Data logs** > **Cal.adjust log**. **2.** Tap the measurement with the **Status** "Failed". **3.** Tap **Result** > **Messages**. **4.** Do the calibration adjustment again.
211	Error present in measurement made with LQC solution setup in position < "number">	A process check failed during the LQC measurement.	Do the LQC measurement again.
212	System message(s) present	One or more system errors are present.	**1.** Tap **Menu** > **Analyzer status** > **System messages**. **2.** Find the message in this table and follow the operator actions to troubleshoot it.

No.	Message	Explanation	Operator actions
213	Automatic backup failed	An error occurred during the scheduled data backup.	**1.** Make sure the values selected in the **Automatic backup** screen are correct. **2.** Check the network and servers used for the backup. **3.** If the message stays, contact your IT engineer.
214	Automatic backup succeeded	A scheduled automatic backup was completed successfully.	
216	Printer error. Check printer paper	Some paper is caught in the printer, or the printer is out of paper, or some other printer error has occurred.	**1.** Make sure no paper is caught in the printer. **2.** If necessary, replace the thermal printer paper. **3.** If the message stays, shutdown and restart the analyzer. **4.** If the message stays, contact your Radiometer service representative.
217	Replacement performed:	A maintenance or user activity was recorded in the **Activity log** screen.	
484	Today is the last day of the month - remember to print out LQC statistics	This is a reminder to print the LQC statistics before the end of the month.	Print the LQC statistics for the month.
588	Measured value is less than the lower limit of the defined statistical range	The measured value of the parameter is below the lower limit of the statistical range.	**1.** Do the LQC or calibration-verification measurement again. **2.** If the message stays, follow local procedures to troubleshoot this type of error.
589	Measured value is higher than the upper limit of the defined statistical range	The measured value of the parameter is above the upper limit of the statistical range.	**1.** Do the LQC or calibration-verification measurement again. **2.** If the message stays, follow local procedures to troubleshoot this type of error.
604	Parameter not installed	Parameter was not installed or is corrupted. Parameter cannot be measured.	Contact your local Radiometer service representative.
641	AQT90 FLEX restarted	The analyzer was restarted from power off.	
703	LQC lot in <*position*> has expired.	The QC material registered in the given position has passed its expiry date.	**1.** Register a new lot of LQC material on the analyzer. **2.** Do an LQC measurement with the LQC material.

No.	Message	Explanation	Operator actions
733	New part installed	A new part was successfully installed on the analyzer.	
745	Low hard disk space	Low hard disk space.	Take appropriate action.
769	AQT90 FLEX <> RADIANCE system communication error	Communication error between the analyzer and the AQURE/RADIANCE system.	Contact your local Radiometer service representative.
770	Failed to restore the selected setup	The setup could not be restored.	**1.** Download the setup data from another floppy disk, hard disk or network. **2.** If the message stays, contact your local Radiometer service representative.
771	The selected setup was successfully restored	The procedure to load a saved setup is completed.	
772	Operator activity: <*operator message*>	An operator added the given message in the **Activity log** screen.	
773	Remote operator logged on with Operator ID:	An operator used the given ID to log on to the analyzer via NetOp[a].	
774	Remote operator logged off with Operator ID:	An operator with the given ID logged off the remote operator.	
775	Failed to restore Default setup	Restoring analyzer setup to default values has failed.	Contact your local Radiometer service representative.
776	Default setup was restored successfully	The procedure to restore the Radiometer default setup is completed.	
780	RADIANCE system communication enabled	Communication with the AQURE/RADIANCE system was started from the **Radiance connection** screen.	
781	RADIANCE system communication disabled	Communication with the AQURE/RADIANCE system was stopped from the **Radiance connection** screen.	
782	RADIANCE system data queue emptied	Queued data was sent to the AQURE/RADIANCE system from the **Radiance connection** screen.	
783	Automatic backup started	An automatic backup procedure was started.	
785	Automatic archiving started	An automatic archiving procedure was started.	

No.	Message	Explanation	Operator actions
786	Automatic archiving completed	The automatic archiving procedure was completed without error.	
787	Export of data logs started	An export data logs procedure was started.	
798	Operator logged on	An operator logged on to the analyzer with the given operator ID.	
799	Operator logged off	An operator logged off the analyzer.	
800	Logon attempt failed	An operator could not log on because an invalid password was used.	Enter or scan a valid password.
852	Message from RADIANCE system: <*message*>	The given message was received from the AQURE/RADIANCE system.	
875	Sample aged	The sample has passed the specified age limit.	Collect and analyze a new sample.
886	LIS/HIS: No valid POCT1A DML device ID file	No valid devices ID file for the POCT1A DML protocol can be found. Therefore no connection can be made to the LIS/HIS system.	Check the communication parameters.
887	Solution Pack buffer level low	The **Cup capacity** in the installed Solution Pack is below the value set in the **Replacement warning setup** screen.	
889 to 895	<*Parameter name*> capacity low	The number of remaining tests for the given parameter is below the value set in the **Replacement warning setup** screen.	
896	Calibration adjustment job submission failed	Calibration adjustment failed.	Do the calibration adjustment again.
897	Calibration adjustment verified	The calibration adjustment was verified.	
898	An active calibration adjustment was invalidated	An operator invalidated the active calibration.	
901	Less than 5 % free disk space remaining	Less than 5 % disk space is available to store data on the analyzer.	Back up data to an external storage device. **Note:** If this action is not done, the analyzer will go into *Error* mode.
902	Less than 15 % free disk space remaining	Less than 15 % disk space is available to store data on the analyzer.	Back up data to an external storage device.
903	Automatic backup setup changed	Some values were changed in the **Automatic backup** screen.	

No.	Message	Explanation	Operator actions
1000	System-clean procedure successfully completed	The system clean was completed without error.	
1001	Needle replacement activity completed	The needle was replaced.	
1002	Service inspection activity completed	A service inspection maintenance activity was recorded in the **Activity log**.	
1003	Warning limit exceeded for maximum tests between system-clean procedures	The maximum number of tests between system cleans has passed the warning limit set in the **Maintenance schedule setup** screen.	Do a system clean.
1004	Critical limit exceeded for maximum tests between system-clean procedures	The maximum number of tests between system cleans has passed the critical limit set in the **Maintenance schedule setup** screen.	Do a system clean.
1005	Needle replacement counter has exceeded the warning limit	The total number of needle piercings between needle-replacement procedures has passed the warning limit set in the **Maintenance schedule setup** screen.	Contact your local Radiometer representative to get a service technician to replace the needle. **Note:** If this action is not done before the analyzer gets to the critical limit, it will go into *Error* mode.
1006	Needle replacement counter has exceeded the critical limit	The total number of needle piercings between needle-replacement procedures has passed the critical limit set in the **Maintenance schedule setup** screen.	Contact your local Radiometer representative to get a service technician to replace the needle.
1007	Scheduled system-clean procedure is overdue	A scheduled system clean is overdue.	Do a system clean.
1008	Service inspection scheduled time has been exceeded	A scheduled service inspection is overdue.	Contact your local Radiometer representative to get a service technician to do a service inspection.
1009	Scheduled time for an operator activity has been exceeded	A scheduled user activity is overdue.	**1.** Tap **Menu** > **Analyzer status** > **Other activities** > **Maintenance details**. **2.** Do the user activity that is overdue.
1010	System-clean procedure not successfully completed (aborted)	The analyzer stopped the system clean because it found an error.	**1.** Do a new system clean. **2.** If the message stays, contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1011	System-clean procedure started	A system clean was started.	
1012	Scheduled maintenance activity is overdue	A scheduled maintenance activity is overdue.	**1.** Tap **Menu** > **Analyzer status** > **Other activities** > **Maintenance details**. **2.** Do the maintenance activity that is overdue.
1020	Incubation temperature out of range	The incubation temperature was outside the specified range.	Wait until the analyzer goes into one of its **Ready** modes.
1024	Calibration adjustment background outliers check failed	During calibration adjustment the background outliers check failed.	Do the calibration adjustment again.
1025	Calibration adjustment analyte outliers check failed	During calibration adjustment the analyte outliers check failed.	Do the calibration adjustment again.
1026	Counts measured per cycle are above the valid limit	Process check. During sample analysis, the counts measured per cycle were outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1027	Incubation time out of range	Process check. During sample analysis, the incubation time for a test was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1028	Maximum dark measurement difference out of range	Process check. During sample analysis, the maximum dark measurement was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1029	Optical sensitivity out of range	Process check. During sample analysis, the optical sensitivity was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1030	Drying temperature out of range	Process check. During sample analysis, the drying temperature was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1031	Optical intensity out of range	Process check. During sample analysis, the optical intensity was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1032	Shake time out of range	Process check. During sample analysis, the shake time was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1033	Incubation temperature standard deviation out of range	Process check. During sample analysis, the standard deviation of the incubation temperature was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1034	System software validity check failed	Process check. During sample analysis, the software consistency check failed.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1035	Maximum dark measurements check failed	Process check. During sample analysis, the maximum dark measurements check failed.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1036	Volume in the test cup out of range	Process check. During sample analysis, the volume in the test cup was outside the specified range.	**1.** If necessary, collect a new patient sample. **2.** Analyze the sample.
1037	Optical reference check out of range	Process check. During sample analysis, the optical reference check was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1038	Mean incubation temperature out of range	Process check. During sample analysis, the average incubation temperature was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1039 to 1044	<*Parameter name*> locked	An operator locked the given parameter.	
1045 to 1050	<*Parameter name*> unlocked	An operator unlocked the given parameter.	
1051	No test available for measurement	Either no Test Cartridges are installed, or the installed cartridges contain no valid tests.	**1.** Insert Test Cartridges for the necessary tests. **2.** Do the tests again.
1052	Solution Pack not accessible	The installed Solution Pack has either passed its on-board expiry date or its expiry date.	Replace the installed Solution Pack with a new one.

No.	Message	Explanation	Operator actions
1053	Expiry date of the Solution Pack is within the replacement warning period	The Solution Pack is soon to expire. The analyzer can be set up to send a replacement warning message a number of days before the Solution Pack expires. The number of days is set in the **Replacement warning setup** screen.	
1054	Calibration adjustment failed for <*parameter*> with lot no. <*n*>	Calibration adjustment of the given lot of Test Cartridges failed.	Do the calibration adjustment again.
1055	Calibration adjustment interrupted for <*parameter*> with lot no. <*n*>	An operator stopped calibration adjustment of the given lot of Test Cartridges.	Do the calibration adjustment again.
1056	Calibration adjustment aborted for <*parameter*> with lot no. <*n*>	The analyzer found an error and stopped calibration adjustment of the given lot for the given parameter.	Do the calibration adjustment again.
1057	Needle pierce count exceeded	Process check. The needle pierce count was above the threshold value of 10,000.	Contact your local Radiometer service representative.
1058	Dilution cup volume out of range	Process check. During sample analysis, the volume in the dilution cup was outside the specified range.	Do the test again.
1059	Calibration adjustment process failed	The calibration adjustment failed.	Do the calibration adjustment again.
1060	Calibration adjustment process interrupted	The calibration adjustment was stopped by an operator.	Do the calibration adjustment again.
1061	Calibration adjustment process aborted	The analyzer found an error and stopped the calibration adjustment.	Do the calibration adjustment again.
1062	Sample registration interrupted	An operator stopped registration of a sample.	
1063	Solution Pack cup capacity insufficient to do a calibration adjustment	The Solution Pack does not have enough space to hold the cups that are discarded during calibration adjustment.	Replace the installed Solution Pack with a new one.
1065	Parameter measurement aborted	The analyzer found an error and stopped measurement of the parameter.	**1.** If necessary, collect a new patient sample. **2.** Do the test again.
1066	Parameter measurement interrupted	An operator stopped the given test.	
1067	Sample measurement aborted	The analyzer found an error and stopped the sample analysis.	Analyze the sample again.

No.	Message	Explanation	Operator actions
1068	Temperature out of range before drying	Before the start of a measurement cycle, the temperature of the air in the dryer was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1069	Temperature out of range after drying	After the start of a measurement cycle, the temperature of the air in the dryer was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1070	Air flow temperature out of range	The air flow in the dryer was outside the specified range.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1071	The sample is too old and therefore will not be analyzed	The sample is too old and therefore will not be analyzed	**1.** Collect a new patient sample. **2.** Analyze the sample within the maximum sample age.
1075 to 1088	*<Messages from installed printers>*		Follow the printer-manufacturer's instructions.
1089	LQC measurement aborted	The analyzer found some error and stopped the measurement.	Do the LQC measurement again.
1090	LQC measurement was interrupted	An operator stopped the measurement.	Do the LQC measurement again.
1091	Parameter locked - LQC pending	Either a scheduled LQC measurement is overdue, or an error was found during an LQC measurement.	Do the scheduled LQC measurement.
1092	LQC warning present for LQC in position *<n>*	Either a scheduled LQC measurement is overdue, or an error was found during an LQC measurement with the LQC material that is registered in the given position.	Do the scheduled LQC measurement.
1093	All available parameters locked - LQC pending	Either all scheduled LQC measurements are overdue, or errors were found during all previous scheduled LQC measurements.	Do all scheduled LQC measurements.
1163	Warning and/or critical limit for a system clean activity was updated	An operator changed the warning and/or critical limit for the system clean activity.	
1164	Warning limit for a needle replacement activity was updated.	An operator changed the warning limit for the needle replacement activity.	

No.	Message	Explanation	Operator actions
1170	Reference range/critical limits changed for <*parameter*>	An operator changed the limits of either the **Reference** and/or **Critical** ranges for the given parameter.	
1172	Analyzing unit service accessed	An operator opened a **Service** menu.	
1173 to 1176	<*Parameter* > capacity low	The number of valid remaining tests for the given parameter is below the value set in the **Replacement warning setup** screen.	
1177 to 1181	<*Parameter name*> locked	An operator locked the given parameter.	
1182 to 1186	<*Parameter name*> unlocked	An operator unlocked the given parameter.	
1187	This operation may affect Analyzer's status. An LQC measurement is advised.	The requested operation may change the status of the analyzer.	**1.** Do the operation. **2.** Do LQC measurements.
1188	Restore-all-data operation requested	A restore-all-data operation was requested.	
1189	Parameter requested by RADIANCE system not measured	A test requested via the RADIANCE system could not be done.	**1.** Tap **Menu** > **Analyzer status** > **Consumables**. **2.** Insert a Test Cartridge for parameters that have zero **Remaining tests**. **3.** If necessary, replace the installed Solution Pack. **4.** Analyze the patient sample again.
1190	The analyzer is locked	The analyzer was locked via the AQURE/RADIANCE system.	**1.** Remove the condition that caused the operator to lock the analyzer. **2.** Unlock the analyzer via the AQURE/RADIANCE system.
1191	The analyzer was unlocked	The analyzer was unlocked via the AQURE/RADIANCE system.	
1192	A "Lock parameter" command from the RADIANCE system was ignored	A parameter could not be locked because the analyzer status shown in the AQURE/RADIANCE system did not agree with the actual status of the analyzer.	
1193	An "Unlock parameter" command from the RADIANCE system was ignored	A parameter could not be unlocked because the analyzer status shown in the AQURE/RADIANCE system did not agree with the actual status of the analyzer.	

No.	Message	Explanation	Operator actions
1194	An *Analyzer message* received from the RADIANCE system was ignored	The given instruction could not be done because the analyzer status shown in the AQURE/RADIANCE system did not agree with the actual status of the analyzer.	
1199	The in-progress calibration-verification measurement was aborted by analyzer	The analyzer found an error and stopped the LQC measurement.	Do the LQC measurement again.
1200	In-progress calibration-verification measurement was manually stopped	An operator stopped the calibration-verification measurement.	
1201	Parameter value measured during cal.verification above user-defined control range	The value of a parameter measured during calibration-verification was above the user-defined control range.	
1202	Parameter value measured during cal. verification below user-defined control range	The value of a parameter measured during calibration-verification was below the user-defined control range.	
1203	The next scheduled system check is due.	The next scheduled system check is due.	
1204	System check failed	Errors were found during the system check.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1205	The temperature inside the analyzer lies outside the specified limits.	The temperature in the room where the analyzer is placed has changed. This could occur if the analyzer is put in direct sunlight, or an air-conditioning unit is started.	**1.** Adjust the operating temperature to 15-30 °C. **2.** If the message stays, contact your local Radiometer service representative.
1206	+12V power supply lies outside specified limits	The system check failed.	Contact your local Radiometer service representative.
1207	+24V power supply "A" lies outside specified limits	The system check failed.	Contact your local Radiometer service representative.
1208	+24V power supply "B" lies outside specified limits	The system check failed.	Contact your local Radiometer service representative.
1209	+24Vpower supply "C" lies outside specified limits	The system check failed.	Contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1210	User-defined date and time settings do not match those in the operating system of the analyzer	The values entered for date and time are out of range with the values on the analyzer.	Enter the correct values for date and time.
1211	Three-minute average temperature at incubation wheel is out of range	The system check failed.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1212	System check was aborted by the analyzer	The analyzer found an error and stopped the system check.	**1.** Do a system check. **2.** If the message stays, contact your local Radiometer service representative.
1213	The LCR measurement was aborted by the analyzer	The analyzer found an error and stopped the LCR measurement.	**1.** Do the LCR measurement again. **2.** If the message stays, contact your local Radiometer service representative.
1214	The LCR measurement was interrupted by an operator	An operator stopped the LCR measurement	
1215	Measured value above the upper limit of the reportable range	The value measured during an LCR measurement was above the upper limit of the reportable range of the parameter.	
1216	Measured value below the lower limit of the control range	The value measured during an LCR measurement was below the lower limit of the reportable range of the parameter.	
1218	Insufficient sample available for measurement	There was not enough sample to do a measurement.	• If the measurement was a patient sample analysis, collect a new sample and analyze it. • For all other types of measurement, do the measurement again with a new sample.
1220	Measured LQC value below RiLiBÄK range	The measured value is below the lower limit of the RiLiBÄK range.	
1221	Measured LQC value above RiLiBÄK range	The measured value is above the upper limit of the RiLiBÄK range.	
1224	Hct value determined to be > 62 %	Hct value was found to be > 62 %.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma.
1225	Voltage measured in optical unit is outside specifications	The voltage measured in optical unit is outside the specified range.	Contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1226	The following operators setup via the RADIANCE system could not be added to the analyzer: <*Operator ID*>	The given operator could not be added via the AQURE/RADIANCE system because either the password or the operator ID was not unique.	In the AQURE/RADIANCE system, enter a unique password and operator ID for the given operator.
1227	Operator list received from the RADIANCE system	Operator data from the AQURE/RADIANCE system has overwritten the operator data in the analyzer database.	
1228	Blank Cartridge cup capacity low	The number of remaining tests for the given Demo parameter is below the value set in the **Replacement warning setup** screen.	
1229	Demo parameter locked	An operator locked the Demo parameter.	
1230	Demo parameter unlocked	An operator unlocked the Demo parameter.	
1231	This result must not be used for clinical purposes. A *Demo* parameter was measured.	Do not use the result for clinical purposes. The test was done with a Demo parameter.	
1238	Error found: <"error number">. Automatic recovery was started.	The analyzer shuts down and restarts.	If the analyzer goes into "Error" mode, contact your local Radiometer service representative.
1239	A cleaning operation was aborted.	The analyzer stopped a system-clean procedure.	Do the system-clean procedure again.
1240 1241 1242 1243 1244 1245 1246 1247 1248 1251	Offset/slope changed for parameter <*parameter*>. Caused deletion of reference range and critical limits for <*parameter*>.		Set the reference range and critical limits for the parameter again.
1252 1253 1254 1255 1256	Error in system determining Hct values.	There is an error in the system that determines hematocrit values.	Contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1257	Hct value cannot be correctly determined	The hematocrit value could not be correctly determined.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma. **Note:** If message 1252, 1253,1254, 1255, 1256, 1258, 1259, 1262, 1263 is received at the same time as this one, contact your local Radiometer service representative.
1258 1259	Error in system determining Hct values.	There is an error in the system that determines hematocrit values.	Contact your local Radiometer service representative.
1260	Hct value cannot be correctly determined	The hematocrit value could not be correctly determined.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma. **Note:** If message 1252, 1253,1254, 1255, 1256, 1258, 1259, 1262, 1263 is received at the same time as this one, contact your local Radiometer service representative.
1261	Hct value cannot be correctly determined	The hematocrit value could not be correctly determined.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma. **Note:** If message 1252, 1253,1254, 1255, 1256, 1258, 1259, 1262, 1263 is received at the same time as this one, contact your local Radiometer service representative.
1262 1263	Error in system determining Hct values.	There is an error in the system that determines hematocrit values.	Contact your local Radiometer service representative.
1264	Hct value cannot be correctly determined	The hematocrit value could not be correctly determined.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma. **Note:** If message 1252, 1253,1254, 1255, 1256, 1258, 1259, 1262, 1263 is received at the same time as this one, contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1265	Hct value cannot be correctly determined	The hematocrit value could not be correctly determined.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma. **Note:** If message 1252, 1253,1254, 1255, 1256, 1258, 1259, 1262, 1263 is received at the same time as this one, contact your local Radiometer service representative.
1266	Hct value determined to be >62 %	Hct value was found to be > 62 %.	**1.** Centrifuge the sample. **2.** Analyze the resultant plasma.
1268	PCT locked	An operator locked the given parameter.	
1269	PCT unlocked	An operator unlocked the given parameter.	
1270	PCT capacity low	The number of valid remaining tests for the given parameter is below the value set in the **Replacement warning setup** screen.	
1271	Offset/slope changed for parameter PCT. Caused deletion of reference range and critical limits for PCT.		**1.** Reset reference ranges for PCT. **2.** Reset critical limits for PCT.
1272	Count-analysis check failed	Process check. During sample analysis, the count-analysis check failed.	Do the sample analysis again.
1273	Do a system clean. Inefficient liquid waste disposal.	The measured liquid flow was above the warning limit.	Do a system clean. If the message stays, contact your local Radiometer representative to get a service technician to do a service inspection.
1275	Do a system clean. Inadequate liquid waste disposal.	The measured liquid flow was above the critical limit.	Do a system clean.
1276	Contact your local Radiometer representative.	The measured liquid flow stayed above the critical limit after a system clean	Contact your local Radiometer representative to get a service technician to do a service inspection.
1277	User correction applied to value(s)	User-defined slope/offset corrections were used to calculate the result	
1996	Restart the analyzer. If the message remains, contact your local Radiometer service representative.	Restart analyzer. If problem persists contact service.	**1.** Restart the analyzer. **2.** If the message stays, contact your local Radiometer service representative.

No.	Message	Explanation	Operator actions
1997	Unknown error logged with error code: <*number*>	An error was found that has not been specified.	**1.** Restart the analyzer. **2.** If the message stays, contact your local Radiometer service representative.
1999	UNDEFINED_LOOKUP_STRING		**1.** Restart the analyzer. **2.** If the message stays, contact your local Radiometer service representative.

[a] A software product that gives secure access to the analyzer from a remote location.

Shutting down, moving and restarting the analyzer 8

Shutting down the analyzer

About shutdown

Shutdown is a safe procedure to close down the analyzer.

Note: Do not use the power switch to shut down the analyzer.

When to do a temporary shutdown

Usually, the analyzer is never shut down, so that it is always ready for use. However, in some situations, it is necessary to shut down the analyzer.

- Before the analyzer is moved to a new location
- When it is an action in a troubleshooting procedure
- After a non-USB keyboard or mouse is connected to the analyzer

To do a temporary shutdown

A temporary shutdown is necessary if the analyzer needs to be moved, or is not going to be used for a period of less than 6 days.

1. If there are sample tubes in the sample inlet, remove them.
2. Tap **Menu** > **Utilities** > **Shutdown**.
3. Tap the **Confirm shutdown** button.
4. Wait until the **Shutdown** screen closes and the message **Windows is shutting down** is shown.
5. When Windows has shut down, push the analyzer power switch to the Off (O) position.

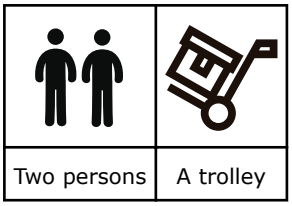
Long-term shutdown of the analyzer

A long-term shutdown is necessary if the analyzer is not used for a week or more. Contact your local Radiometer representative.

Moving the analyzer

To move the analyzer on a trolley

Required item(s)



Prerequisite(s)

- A trolley that can support the analyzer

1. Do a temporary shutdown of the analyzer.
2. Disconnect the power supply cord and peripheral devices.
3. Put the trolley near the analyzer.
4. With another person at the opposite end of the analyzer, put your fingers under the corners of the analyzer.
5. ⚠ **WARNING – *Risk of back and hand injury***
   At the same time as the other person, lift the analyzer and put it on to the trolley.
6. Move the trolley near the new position for the analyzer.
7. ⚠ **WARNING – *Risk of back and hand injury***
   At the same time as the other person, lift the analyzer and put it in its new position.
8. Connect the power supply cord and peripheral devices.

Restarting the analyzer

To restart the analyzer after a temporary shutdown

1. Push the power switch to the On (–) position.
2. Wait until the analyzer goes into a **Ready** mode.
   You may only have to wait 10 minutes, but you may have to wait 2 hours.

To restart the analyzer after a long-term shutdown

1. ⚠ **CAUTION – *Risk of equipment damage***
   Use a power supply cord that meets the required specifications to connect the analyzer to the mains power supply.
2. Push power switch to the On (–) position.
3. When the analyzer tells you, insert a Solution Pack.
4. The analyzer goes into a **Not operational** mode while it warms up. It can last one hour.
5. Wait until the analyzer changes mode.

   Note: The analyzer will go into the mode it was in before it was shutdown.
6. Do what is necessary to get the analyzer back to **Ready** mode.

Installation 9

Installing the analyzer

Delivery of the analyzer

Make sure that the analyzer and all the products that were ordered with it are delivered and are not damaged.

Preparing the location for the analyzer

Make sure that the location meets these environmental requirements:

- It is indoors
- Altitude: Not more than 2000 m (6 562 feet)
- Operating temperature: 15-30 °C (59-86 °F)
- Relative humidity: 20-80 %
- Mains power supply: 100/110/120/220/230/240 V ±10 %; 50/60 Hz ±5 %

Make sure that these space requirements are met:

- There is sufficient space in front of the analyzer
- There is sufficient space on the sides for good air flow
- ⚠ **WARNING – *Risk of electric shock***
  Make sure the analyzer is a minimum of 1.5 m from patient beds.
- Easy access to the mains power supply switch

To unpack and move the analyzer

Required item(s)

	
Two persons	A trolley

Prerequisite(s)

- A trolley that can support the analyzer

1. Put the analyzer box on a horizontal surface with the topside up. Arrows on the box point to the topside.
2. Use a Torx 20 screwdriver to remove the screws in the lower part of the box. Screwdrivers on the box point to the screws.

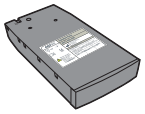
   Note: These screws attach the top and bottom of the box to the sidewalls.
3. Remove the top and sidewalls.

4. Remove the foam and plastic.

   Note: The packaging material can be used as protection when the analyzer is moved to a different location. The material can withstand temperatures from –20 °C to 60 °C.
5. Put the trolley near the analyzer.
6. With another person at the opposite end of the analyzer, put your fingers under the corners of the analyzer.
7. ⚠ **WARNING – *Risk of back and hand injury***
   At the same time as the other person, lift the analyzer and put it on to the trolley.
8. Move the trolley near the new position for the analyzer.
9. ⚠ **WARNING – *Risk of back and hand injury***
   At the same time as the other person, lift the analyzer and put it in its new position.
10. ⚠ **WARNING – *Risk of damage to electronic and mechanical components***
    Do not connect the analyzer to the mains power supply until the temperature of the analyzer is the same as the temperature of the room. You may have to wait a maximum of 2 hours.
11. Follow the installation procedure.

To install the analyzer

Required item(s)

	
Supplied power cord	A new Solution Pack

Prerequisite(s)

- CAL and Test Cartridges for each parameter the analyzer is to measure are available

⚠ **CAUTION – *Risk of equipment damage***
Use a power supply cord that meets the required specifications to connect the analyzer to the mains power supply.

When the analyzer has been installed, keep it connected to the mains power supply so it can be used at all times.

1. Connect the power supply cord to the analyzer and the mains power supply.
2. Push the power switch to the "On" (—) position.
3. When the analyzer tells you, insert the Solution Pack.

   Note: The analyzer goes into **Not operational** mode while it warms up. It can last one hour.
4. Wait until the analyzer goes into **Replacement** mode.
5. Do calibration adjustment for each parameter the analyzer is to measure.
6. Insert a Test Cartridge for the parameters that are calibration adjusted.

Connecting peripheral devices

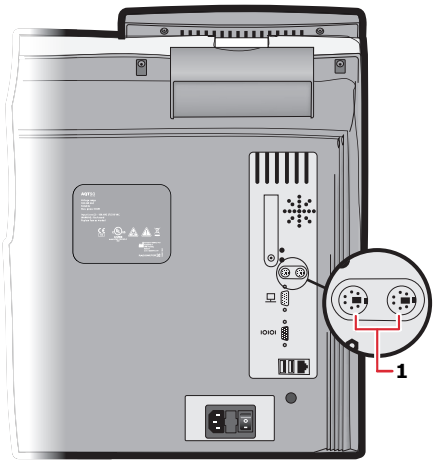
To connect a USB external keyboard / mouse

1. Connect the external keyboard / mouse cable to one of the USB ports (1) on the analyzer.

Note: The analyzer will find the connection to the external keyboard / mouse immediately.

To connect a non-USB external keyboard / mouse

1. Do a temporary shutdown of the analyzer.
2. Connect the external keyboard / mouse cable to one of the external keyboard and mouse ports (1) of the analyzer.



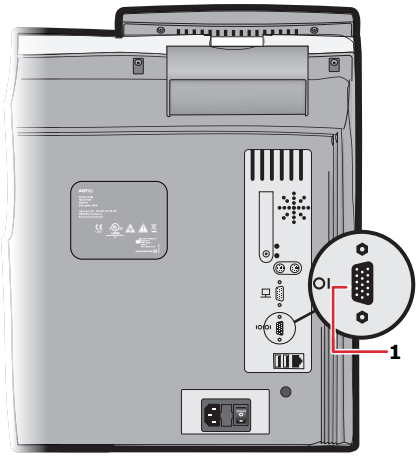
3. Restart the analyzer.

Related information

To do a temporary shutdown, page 95
To restart the analyzer after a temporary shutdown, page 96

To connect an external barcode reader

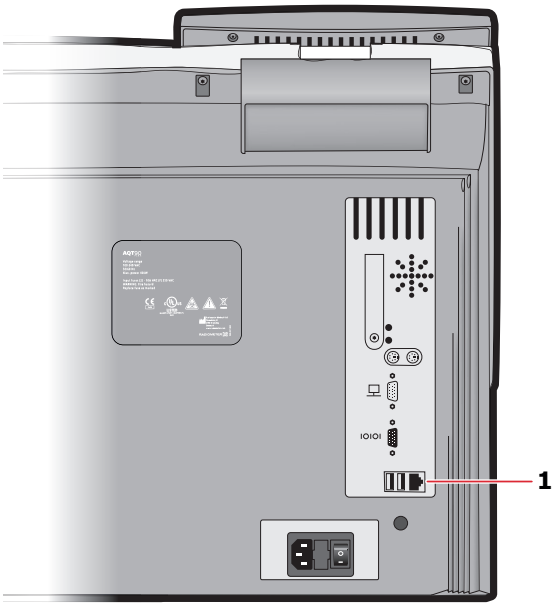
1. Connect the cable of the barcode reader to the external barcode reader port (1) of the analyzer.



Note: The analyzer will find the connection to the barcode reader immediately.

To connect the analyzer to a network

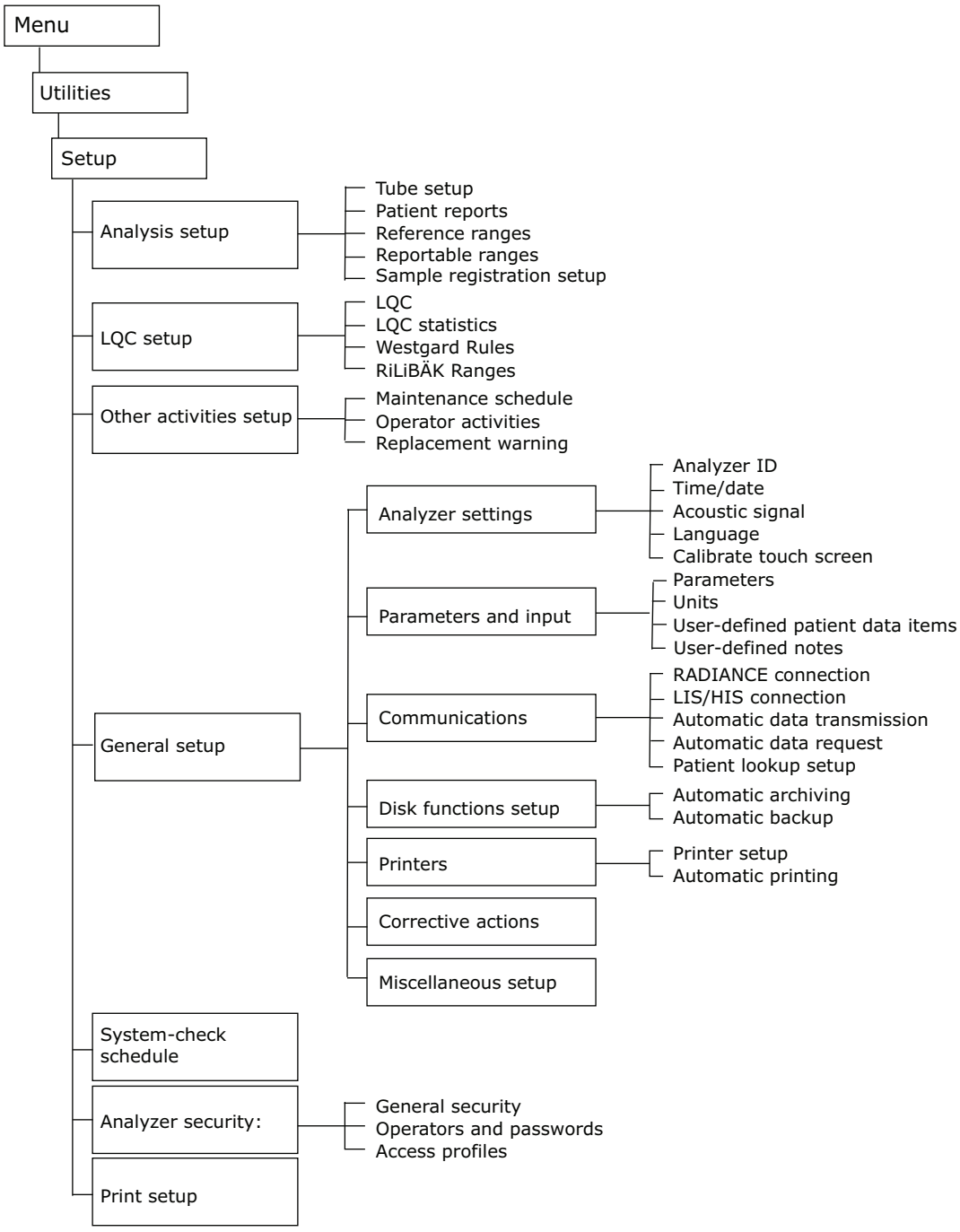
1. Connect your network cable to the network cable port of the analyzer (1).



Note: If the analyzer is set up for connection to a LIS/HIS or data management system, the analyzer will find the network immediately.

Setup 10

Setup menu structure



To print setups

1. Tap **Menu** > **Utilities** > **Setup** > **Print setup**.
2. Deselect the check buttons for the setups you do not want to print.
3. Tap the **Print** button.
4. If necessary, select the printer and tap the **Select printer** button.
5. Tap the **Close** button.

Managing operators

To select the logon procedure

1. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **General security**.
2. In the **Authenticate operator by** field, select the option you want.

Option	Action
To let most operators log on with an **Operator ID** and **Password**, but let some operators log on with a **Logon barcode**	Select "Operator ID and password as primary"
To let most operators log on with a **Logon barcode**, but let some operators log on with an **Operator ID** and **Password**	Select "Logon barcode as primary"
To only let operators log on with an **Operator ID** and **Password**	Select "Operator ID and password only"
To only let operators log on with a **Logon barcode**	Select "Logon barcode only"

3. Tap the **Close** button.

Access profiles

An access profile specifies what an operator with the given profile can do on the analyzer.

- The operations that can be done
- The menus and screens that can be opened
- The shortcut buttons that are available to operators

Seven access profiles are available. Access profiles may be edited, but their names cannot be changed. No new access profiles can be created. An access profile must be selected for each operator.

To edit an access profile

Note: All access profiles may be edited, but some only in part.

⚠ **WARNING – *Risk of incorrect results***
Radiometer recommends that an access profile is selected and edited for each type of operator. The access profile given to each operator must match their qualifications and experience.

1. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **Access profiles**.
2. Select the access profile you want to edit.

3. Choose the activity you want to permit and follow the steps for each activity.

Activity	Steps
To permit LQC measurements	**a)** Select the **Perform LQC measurements** check button.
To permit **System clean** and **Log service inspection** activities	**a)** Select the **Perform other activities** check button.
To permit replacement of the Solution Pack, and the replacement and/or insertion of cartridges	**a)** Select the **Perform replacements** check button.
To permit calibration adjustments and LCR measurements	**a)** Select the **Perform cal.adjustment** check button.
To permit test-lot verification measurements after calibration adjustment	**a)** Select the **Perform LQC measurements** check button. **b)** Select the **Perform cal.adjustment** check button.

4. Tap the **Menus and buttons** button.
5. To create a shortcut button.

   Note: You can create a shortcut button to six menus.

   a) In the **Menu items in quick menu** field, select the menu you want a shortcut button for.

   b) In the **Main screen button configuration** field, select a button position for the shortcut.

   c) Do steps 5a) and 5b) again for each shortcut button you want to create.
6. To create access to menus.

   a) In the **Menu items in quick menu** field, select the menu that you want to give access to.

   b) Tap the button with a checkmark. 

   Note: Make sure a checkmark is shown in the selected check box.

   c) Do steps 6a) and 6b) again for each menu you want to give access to.

   Note: The table shows which menus you must give access to in order to perform the actions you selected in step 3.

Permitted activity	Menus necessary to access
System clean and **Log service inspection**	**Analyzer status**, **Introduce sample**
Perform calibration adjustment	**Analyzer status**
Perform replacements	**Analyzer status**
Perform system checks	**Analyzer status**
Edit data in logs	**Data logs** for access to all logs
Approve patient results	**Patient results log**
Perform LQC measurements	**Introduce sample**
Perform LCR measurements	**Introduce sample**

7. Tap the **Back** > **Close** buttons.

To prevent patient sample analysis

You must edit an access profile as follows:

1. Do not create a shortcut button for the **Introduce sample** button.
2. Do not create access to the **Introduce sample** menu.

Anonymous use

Operators do not have to log on to an analyzer that is set up for anonymous use. The access profile selected for anonymous use specifies the shortcut buttons and menus that anonymous operators can use.

To set up anonymous use

1. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **General security**.
2. Select the **Allow anonymous use** check button.
3. Select an access profile for anonymous use.
4. Tap the **Close** button.

Default operators

Some operators are set up by default and cannot be removed.

Operator	Access
Radiometer	All operator and service menus.
Remote operator	All operator and service menus. **Note:** This operator is only shown when you have the "remote support" option. Contact your local Radiometer service representative for details.

To add an operator

1. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **Operators & passwords**.
2. Tap the **Add operator** button.
3. Choose an option and follow the steps for it.

Option	Steps
To make the operator log on with an **Operator ID** and a **Password**:	**a)** Enter a unique ID for the operator. **Note:** Do not include characters such as apostrophes (') and slashes (/). **Note:** Only enter 26 characters, so that the complete ID is seen in the **Log on** screen. **b)** Enter or scan in the password for the operator. **Note:** The password must contain a minimum of 4 characters. **c)** Enter or scan in the password again in the **Confirm password** field.

Option	Steps
To make the operator log on with a **Logon barcode**:	**a)** Enter or scan in the logon barcode for the operator. **Note:** The logon barcode must be unique and contain a minimum of 4 characters. **b)** Enter or scan in the logon barcode again in the **Confirm logon barcode** field.
To make the operator log on with an **Operator ID** and a **Password** or with a **Logon barcode**:	**a)** Enter a unique ID for the operator. **Note:** Do not include characters such as apostrophes (') and slashes (/). **Note:** Only enter 26 characters, so that the complete ID is seen in the **Log on** screen. **b)** Enter or scan in the password for the operator. **Note:** The password must contain a minimum of 4 characters. **c)** Enter or scan in the password again in the **Confirm password** field. **d)** Enter or scan in the logon barcode for the operator. **Note:** The logon barcode must be unique and contain a minimum of 4 characters. **e)** Enter or scan in the logon barcode again in the **Confirm logon barcode** field.

4. Tap the **Back** button.

   Note: If data is not valid, the analyzer sends an acoustic signal and a feedback message.
5. Make sure that the operator is selected.
6. ⚠ **WARNING – *Risk of incorrect results***
   Select an access profile that matches the qualifications and experience of the operator.
7. To record events while the operator is logged on, select the **Enable event logging** check button.

   Note: Only operators with the access profile of "Manager" or "Supervisor" can see and select this check button.
8. Tap the **Close** button.

To remove an operator

1. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **Operators and passwords**.
2. Select the operator.
3. Tap the **Remove operator** button.
4. Tap the **Close** button.

To set a logoff time for all operators

1. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **General Security**.
2. Tap the **Logoff time** button.
3. Set a logoff time in minutes and seconds.

   Note: If no time is set operators will be automatically logged off after 3 minutes. The maximum logoff time that can be set is 60 minutes and 59 seconds.
4. Tap the **Back** > **Close** buttons.

About centralized user management

Centralized user management lets a connected AQURE/RADIANCE system do some of the management procedures usually done on the analyzer. The table shows which procedures will have to be done on the connected AQURE/RADIANCE system if centralized user management is set up.

Procedures	Done on the AQURE/RADIANCE system	Done on the analyzer*
Add new operator	X	
Select an access profile for a new operator	X	
Remove operators	X	
Select the logon procedure		X
Set up anonymous use of the analyzer		X
Edit an access profile		X
Set the logoff time for all operators		X

* These procedures can also be done remotely from a connected AQURE/RADIANCE system.

To set up centralized user management

Note: We recommend that you use the same set of rules to add analyzer operators to the AQURE/RADIANCE system as you use to add operators to the analyzer. If centralized user management is then disabled, operators can continue to log on.

1. In the connected AQURE/RADIANCE system, add present operators of the analyzer as present operators in the AQURE/RADIANCE system.

   Note: This is important because when centralized user management is set up, all operator data in the analyzer is overwritten by data received from the AQURE/RADIANCE system. Only present operators in the AQURE/RADIANCE system can log on to the analyzer.
2. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **General security**.
3. Select the **Enable centralized user management** check button.
4. Select the **Close** button.

   Note: This will have no effect on the activities in progress.

Event logging

Logged events

The event log keeps a record of these events.

- Registration of patient samples
- Analysis of patient samples
- Registration of LQC material
- LQC measurements
- Calibration adjustments

- Maintenance activities
- Replacement of consumables

Event log

An event log records events that occur when some operators are logged on. Events are recorded in sequence.

The log can be used to examine the competency of operators and identify the need for more training.

To enable event logging

Prerequisite(s)

- The operator who does this procedure must have a "Manager" or "Supervisor" access profile

The procedure tells you how to set up the analyzer to log events for an operator.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Enable event logging** check button.
3. Tap the **Close** button.
4. Tap **Menu** > **Utilities** > **Setup** > **Analyzer security** > **Operators and passwords**.
5. Select the operator.
6. Select the **Enable event logging for the selected operator** check button.
7. Tap the **Close** button.

To examine the competency of an operator

Prerequisite(s)

- Events logging was enabled for the operator

1. Tap **Menu** > **Data logs** > **Event log**.
2. Tap the **Filter** button.
3. Enter the start and end dates.
4. Enter the ID of the operator in the **Operator ID** field.
5. Tap the **Apply** button.
   The competency of the operator can be examined from the sequence of recorded events.

   Note: The event log can be printed.
6. Tap the **Close** button.

Compliance training

About compliance training

Regulations in some countries require compliance training of operators and records to show that training is in compliance. This is possible on the analyzer. The Demo parameter and Blank Cartridges are necessary.

To get the Demo parameter

Compliance training requires the use of the Demo parameter.

1. Contact you local Radiometer service representative.

To set up and do compliance training

Prerequisite(s)
These are the necessary procedures:

1. Enable event logging for the operators who are to be trained.
2. Set up the analyzer for compliance training.
3. Train the operators to analyze samples.
4. Examine the competency of the operators.

About Blank Cartridges

Blank Cartridges contain empty cups and no reagents. The cartridge can be used in the place of Test Cartridges in training sessions to reduce analysis time. The Blank Cartridge measures a training parameter named Demo.

About Demo parameter

Facts about the Demo parameter:

- The value for a Demo parameter result is always 90
- The unit for the Demo parameter result is AQT
- Demo parameter results must never be used for clinical purposes
- Demo parameter results cannot be sent to a connected LIS/HIS/data management system
- Calibration adjustment of the Demo parameter is not necessary
- Liquid quality control (LQC) measurements cannot be done for the Demo parameter

To set up the analyzer for compliance training

Prerequisite(s)

- The Demo parameter is available
- Event logging is enabled for operators
- If necessary, a report layout for compliance training

1. Tap **Menu** > **Analyzer status** > **Consumables**.
2. Make sure that the "Blank cups" parameter has some remaining tests. If necessary, insert a new Blank Cartridge.
3. Tap the **Close** button.
4. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **Parameters**.

5. To enable the Demo parameter.
   a) Select Demo in the **Parameter** column.
   b) Make sure that **Enabled/locked** value for the Demo parameter is "Yes/No".
   c) If the value is not "Yes/No", tap the **Enable/disable** button.
6. Tap the **Close** button.
   A number of setups are automatically created.

   Note: A green Demo parameter tab is shown. It changes to a red color when the Blank Cartridge is empty.

Related information
To create a Patient ID / Report layout, page 118

Setups created for the Demo parameter

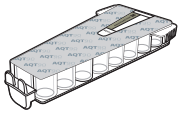
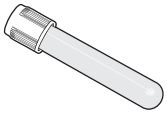
When the Demo parameter is enabled, a number of setups are automatically created.

- A test panel named Demo is created
- A tube type named Demo (with a black cap color) is created
- Default values are given to the critical and reference range limits of the Demo parameter. The values may be edited.

Note: These setups are automatically deleted when the Demo parameter is disabled.

To train operators to analyze samples

Required item(s)

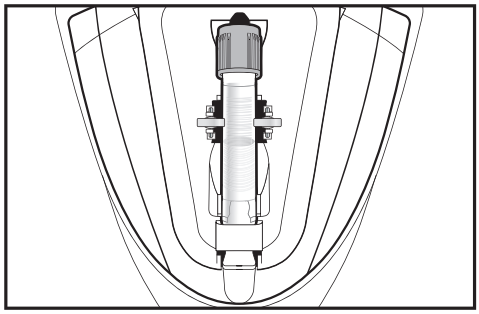
	
A Blank Cartridge	An approved sample tube

Prerequisite(s)

- An installed Blank Cartridge with some remaining tests
- The approved sample tube must contain a minimum volume of 2 mL of a 0.9 % (w/v) saline solution (sodium chloride in water), a whole-blood sample or a plasma sample
- The analyzer is in one of three **Ready** modes: **Ready**, **Ready for sample registration** or **Ready for sample registration and cartridge replacement**.

1. Tap the **Introduce sample** button.

   Note: If there is a tube in the tube holder, remove it.
2. Put the tube into the tube holder with its cap side upwards and barcode pointing inwards. Press the tube down between the rollers.



3. Enter text in the **Patient ID** field to show that the sample is not a patient sample. For example: Training sample.
4. Enter the necessary data in **Patient identification** screen.

   Note: You must enter data in fields with this icon: 
5. Tap the **Accept** button.
6. Select "Demo" for the **Tube type**.
7. Select "Demo" for the **Test type**.
8. Tap the **Start** button.
   You can read the **Time to result** in the result link.

Analyzer operations

To lock the analyzer

No samples can be analyzed when the analyzer is locked. However, the analyzer will continue to do automatic calibrations.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Lock the analyzer** check button.
3. Tap the **Close** button.

To unlock the analyzer

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Deselect the **Analyzer locked** check button.
3. Tap the **Close** button.

To lock/unlock parameters for measurement

A locked parameter cannot be measured.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **Parameters**.
2. Select the parameter.
3. Tap the **Lock/unlock** button.

   Note: The last value in the **Enabled/locked** column must be "Yes" to lock the parameter, and "No" to unlock it.
4. Tap the **Close** button.

To show a message on the analyzer screen

The message is shown below the result links.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Enter a message in the **Analyzer message** frame.
3. Tap the **Close** button.

To calibrate the touch screen

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Calibrate touch screen**.
2. A pop-up screen tells you that the analyzer needs to restart before you can calibrate the screen.
3. Tap the **Continue** button.
4. Touch the tip of each arrow when they are shown on the screen.

   Note: If you cannot use the touch screen, use a mouse or keyboard to access the menus and start the procedure again.

Analyzer settings

To enable the screen saver

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Show screen saver** check button.
3. In the **Screen saver** frame, select the number of minutes the analyzer must not be in use before the screen saver is shown.
4. Tap the **Close** button.

To create a heading for printed data

Note: The text you enter in this procedure is the heading that will be shown on all data printed by the analyzer and data sent to LIS/HIS and AQURE/RADIANCE systems. **Analyzer type** will also be included.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Analyzer ID**.
2. Enter the text for the heading (up to 25 characters). For example, a hospital or department name.
3. Tap the **Close** button.

To set the time and date

This procedure sets the time and date on the analyzer clock. The time at which measurements and activities are done are read from this clock.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Time/date**.
2. Enter the time.
3. Enter the date.

   Note: The **Previous** button cancels entered values.
4. Tap the **Close** button.

   Note: The analyzer goes into **Error** mode if the difference between your settings and the system settings is more then 100 hours.

To set the acoustic signals

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Acoustic signal**.
2. Select when you want an acoustic signal to be given.

3. Use the scroll buttons to select the volume level.
4. Tap the **Close** button.

To mute all acoustic signals

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Acoustic signal**.
2. Select the **Mute all acoustic signals** check button.
3. Tap the **Close** button.

To change the screen language

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Analyzer settings** > **Language**.
2. Select the language.
3. Tap the **Save language** button.
4. Tap the **Continue** button.
5. Tap the **Continue** button.
   The analyzer shuts down and restarts.

Analysis setup

Test panels

Test panels

A test panel contains one or more tests. The tests are intended for use as an aid in the diagnosis of medical conditions. For example, a Cardiac risk test panel could include tests for troponin I, myoglobin and CKMB as an aid in the diagnosis of heart conditions.

To set up test panels

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Tube setup**.
2. Tap the **Define panels** button.
3. Tap the **New** button.

   Note: A maximum of 8 panels can be set up.
4. In the **Selected panel** frame, enter a name for the new panel.
5. In the **Available test types** frame, select a test for the panel.
6. Tap the right arrow button. 
7. Do steps 5 and 6 again for each test for the panel.

   Note: A maximum of 5 tests can be added to a panel.
8. Tap the **Back** > **Close** buttons.

Tube types

About tube types

It is necessary to set up a tube type for each type of sample tube approved for use on the analyzer. Usually, three types of sample tube are used.

- Tubes with EDTA anticoagulant
- Tubes with lithium heparin anticoagulant
- Tubes with citrate anticoagulant

Related information
Approved primary sample tube requirements, page 157

To set up a tube type

Prerequisite(s)

- Test panels are set up

Note: In this procedure, it is important to select the correct color for the tube cap and enter a name that lets operators easily and correctly identify the tube.

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Tube setup**.
2. Tap the **New** button.
3. In the **Selected tube type** frame, enter a name for the new tube type.
4. In the **Color:** field, select the color of the cap.
5. In the **Blood fraction:** field: select "1" for tubes with Heparin or EDTA anticoagulants and "0.9" for tubes with citrate anticoagulant.

   Note: The blood fraction is used for the correction due to dilution with anticoagulant solution.
6. In the **Available panels** frame, select a panel that contains tests that can be done with the tube.
7. Tap the right arrow button. 
8. Make sure the selected panel is shown in the **Selected panels** frame.
9. Do steps 6 to 8 again for each panel you want to include.

   Note: A maximum of four panels can be selected.
10. Tap the **Close** button.

Blood fraction correction

Blood samples collected in tubes with citrate anticoagulant are diluted by the liquid anticoagulant. Test results are therefore corrected. This formula is used:

Corrected result = [1/(Blood fraction value)] x [Uncorrected result]

The blood fraction for citrate is 0.9.

Test order codes

Test order codes

Test order codes are unique codes that can be set up in LIS/HIS systems and the analyzer. When test order codes are set up, tests and patient identification data are

automatically downloaded to the analyzer. Test order codes also make it possible to see if the correct tube type has been used before a sample analysis is started.

To set up test order codes

Prerequisite(s)

- Test panels are set up
- Tube types are set up
- LIS/HIS test order codes are available

Note: Only one tube type can be selected for a test order code.

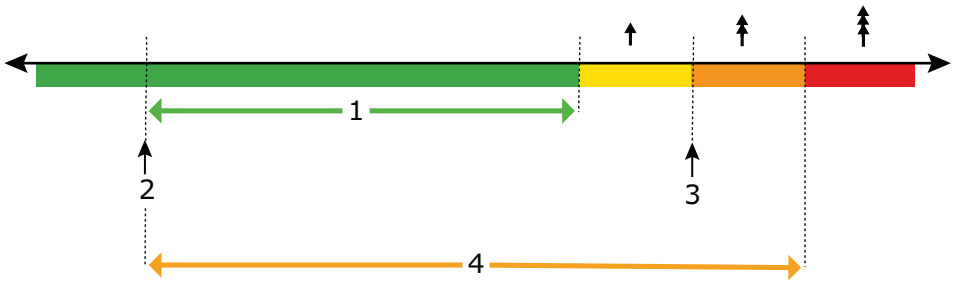
1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Tube setup**.
2. Select a **Tube type** with an anticoagulant that can be used for the tests in the test order code.
3. Tap the **Define test order codes** button.
4. Tap the **New** button.
5. Enter the LIS/HIS test order code in the **Code:** field.
6. Select the tests to select when the test order code is used.

   Note: A maximum of 5 tests can be selected. This is the maximum number of times the rubber septum of a sample tube can be pierced without risking septum disintegration, resultant sample contamination and incorrect results.
7. Do steps 2 to 6 for each test order code you want to set up.
8. Tap the **Back** > **Close** buttons.

Reference ranges and critical limits

About ranges and critical limits

Patient results are marked by symbols to show where they fall in relation to reference ranges, critical limits and reportable ranges. The diagram illustrates these relationships. Results that fall below the reportable range are not considered abnormal and are therefore shown in green.



1 Reference range

2 Lower critical limit

3 Upper critical limit

4 Reportable range

About reference ranges

Reference range is the range of test values expected for a healthy population of individuals or some other defined group. Patient results that lie outside the limits will be marked with a symbol (either ↑ or ↓).

"Reference ranges are valuable guidelines for the clinician, but they should not be regarded as absolute indicators of health and disease. Reference ranges should be used with caution since values for 'healthy' individuals often overlap significantly with values for persons afflicted with disease. In addition, laboratory values may vary significantly due to methodological differences and mode of standardization." (Tietz NW, Logan NM. Reference ranges. In: Tietz NW, ed. Fundamentals of clinical chemistry. 3rd ed. Philadelphia: WB Saunders Company, 1987: 944-75).

To set the limits for patient age groups

This procedure is necessary if the reference ranges are not the same for all age groups.

Note: The age groups you set are for all parameters, they are not parameter-specific.

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Reference ranges**.
2. Tap the **Age groups** button.
3. Use the left or right arrow buttons to select an age-limit field.
4. Use the up-and down arrows to select the age.
5. Do steps 3 and 4 again to set the limits for each age group.

   Note: The youngest age group always starts at zero years. The oldest age group always starts at the highest selected age limit. For example, if the highest selected age limit is 70 years, the oldest age group is from 70 to 70+ years.
6. Tap the **Back** > **Close** buttons.

To set up reference ranges and critical limits

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Reference ranges**.
2. Select a parameter in the **Parameter** field.
3. Tap the **Edit** button.
4. Enter values for the reference range and the critical limits.

   If the entered values are not accepted, a feedback message will be shown above the parameter tabs on the left of the screen.

   Note: If values below the lower limit of the reportable range are thought to be normal for the parameter, you must enter the same value for the lower limit of the reference range and the lower critical limit. The lower limit of the reportable range must also be given the same value. This makes sure that the correct symbols are used on patient results.
5. Do steps 2 to 4 again for each parameter.
6. Tap the **Close** button.

About critical limits

Critical limits are user-defined and can be entered into the analyzer software. If critical limits are entered, patient results that lie outside the limits will be marked with a symbol (either  or ). The symbol may be used to indicate when a patient requires immediate attention.

Reportable ranges

About reportable ranges

Reportable range is the range of results from a testing system or method over which analytical performance is claimed. Patient results that lie outside the upper limit will be marked with a symbol ( ).

See the *AQT90 FLEX parameter-specific Test Kit* inserts for details.

To set up reportable ranges

Note: A symbol is shown on a test result that falls outside the reportable range of the measured parameter.

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Reportable ranges**.
2. Choose an option and follow the steps for it.

Option	Steps
To set the reportable range of all parameters to the default values	Tap the **Set default value to all** button.
To set the reportable range for a parameter to the default value	**a)** Select a parameter in the **Parameter** field. **b)** Tap the **Set default value** button.
To set the reportable range for a parameter	**a)** Select the parameter in the **Parameter** field. **b)** Enter new values for the upper and lower limits of the reportable range. **Note:** New values must be within the reportable range specified in the *AQT90 FLEX parameter-specific Test Kit* inserts. **Note:** If the entered values are not accepted, a feedback message will be shown above the parameter tabs on the left of the screen. **Note:** If values below the lower limit of the reportable range are thought to be normal for the parameter, the lower limit of the reportable range must be given the same value as the lower limit of the reference range and the lower critical limit. This makes sure that the correct symbols are used on patient results.

3. Tap the **Close** button.

Registration Tickets

About Registration Tickets

Registration Tickets are printed by the analyzer. The tickets contain data about patient samples, the ID of the analyzer and a barcode. Operators can scan the barcode on the tickets to show the patient results on screen.

You can set up the analyzer to automatically print registration tickets after patient sample analyses are started.

To select data in Registration Tickets

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Sample registration setup**.
2. Select the check buttons for the data you want to include in Registration Tickets.
3. Tap the **Close** button.

To set up automatic printing of Registration Tickets

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Printers** > **Automatic printing**.
2. Select the **Registration ticket** check button.
3. Tap the **Close** button.

Result links

To set up result links

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Sample registration setup**.
2. Enter the number of result links to let operators use.

   Note: The screen can show 5 links at a time.
3. In the **Patient identification** field, select the data item to identify patient samples in result links.
4. Tap the **Close** button.

Sample age evaluation

Sample age calculation

- If a **Draw time** is entered for the sample:

  [Sample age] = [Time the sample analysis was completed] – [Time the sample was drawn]
- If no **Draw time** is entered for the sample:

  [Sample age] = [Time the sample analysis was completed] – [Time the **Introduce sample** button was tapped (prior to the sample being placed in the analyzer)]

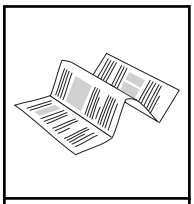
Maximum sample age

This is the period of time after a sample is collected within which whole-blood samples kept at an ambient temperature of 18-25 °C (65-77 °F) must be analyzed. The value set must be valid for all parameters.

See the *AQT90 FLEX parameter-specific Test Kit* inserts for details.

To set a maximum sample age

Required item(s)



Test Kit insert

Prerequisite(s)

- An *AQT90 FLEX parameter-specific Test Kit* insert for each parameter to be measured is available

It is only possible to set one value. It is therefore important that you set a value that is valid for all parameters measured on your analyzer.

1. Find the maximum sample age for all the parameters measured on your analyzer.
2. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Sample registration setup**.
3. Enter the lowest value in the **Maximum sample age** field.
4. Tap the **Close** button.

To interpret barcodes on sample tubes

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Sample registration setup**.
2. In the **Interpret barcode input as** field, select a value.

   Note: If you want to use the FLEXLINK module, you must select "Accession number".
3. Tap the **Close** button.

Related information
To enable the use of FLEXLINK modules, page 141

Patient ID / Report layouts

About patient report layouts

A patient report layout has 2 parts:

- A patient ID part – lets you create the content and layout of the **Patient identification** screen
- A patient results part – lets you create a template for the content and layout of the **Patient results** screen

You can select a default patient report layout. The default report layout is the **Report layout** shown in the **Patient identification** screen when it opens.

To create a Patient ID / Report layout

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Patient reports**.
2. Tap the **New** button.

3. To add data items to the layout:
   a) Select a data item In the **Available items** frame.
   b) Tap the right arrow button.

   Note: Data items are shown in the layout as you add them.
   c) Do steps a) and b) again for each data item you want to add.

Option	Steps
If patient data is to be automatically requested from a LIS/HIS/data management system	Add the data item that was selected in the **Interpret barcode input as** field during the procedure to interpret barcodes on sample tubes.
If patient data is to be manually requested from a LIS/HIS/data management system	Add the data field selected in the **Request patient demographics** frame during the procedure to set up automatic requests for patient data. It will be **Patient ID** or **Accession number**. For the AQURE system it can also be **Patient account number**. **Note:** If both these items are added, it is the item closest to the top of the **Patient identification** screen that must be filled before you can manually request patient data from the LIS/HIS/data management system.
If patient data is to be looked up, found and requested manually	Add the "Patient department" data item.
If the analyzer is connected to a RADIANCE system.	Add the **Maximum sample age** item. The value shown in this field will show the value set in the RADIANCE system not the value set in the analyzer.

4. To make a data item mandatory:
   a) Select the data item in the **Selected items** frame.
   b) Tap the **Set as mandatory** button.

   Note: The mandatory icon is shown adjacent to the data item. 
5. To set a default value for a data item, do as follows:
   a) Select the data item in the **Selected items** frame.
   b) Tap the **List** button.
   c) Select a value in the **Available values** field.
   d) Tap the **Select** button.
6. Tap the **Back** button.
7. Enter a name for the report in the **Name** field.
8. Tap the **Close** button.

To select a Patient ID / Report layout as default

The patient ID / report layout you select as default is the one shown in the **Patient identification** screen when it opens.

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Patient report**.
2. Select the layout.
3. Tap the **Make default** button.
4. Tap the **Close** button.

To edit a Patient ID / Report layout

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Patient report**.
2. Select the layout.
3. Tap the **Edit patient ID layout** button.
4. To add a data item to the layout:
   a) Select a data item In the **Available items** field.
   b) Tap the right arrow button.
5. To remove a data item from the layout:
   a) Select a data item In the **Selected items** field.
   b) Tap the left arrow button.
6. To make a data item mandatory:
   a) Select the data item in the **Selected items** field.
   b) Tap the **Set as mandatory** button.
7. To set a default value for a data item:
   a) Select the data item in the **Selected items** field.
   b) Enter a value, or: (1) Tap the **List** button. (2) Select a value. (3) Tap the **Select** button.
8. Tap the **Back** button.
9. If necessary, enter a new name for the report in the **Name** field.
10. Tap the **Close** button.

To create extra items for use in Patient ID / Report layouts

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **User-defined patient data items**.
2. Tap the **Add** button.
3. Enter the name of the item.

   Note: Only enter 20 characters, so that the complete name is seen in the **Patient Identification** screen.
4. Choose an option and follow the steps for it.

Option	Steps
To create an alphanumeric item with no selection list.	**a)** Select "Alphanumeric" in the **Type** field.
To create an alphanumeric item with a selection list. **Note:** A minimum of 2 items must be added to create a list.	**a)** Select "Alphanumeric" in the **Type** field. **b)** Select the **Use selection list** check button. **c)** Tap the **Add** button. **d)** Enter a text. **e)** Do steps "a" to "d" again for each item you want in the selection list.
To create a numerical item with no selection list.	**a)** Select "Numerical" in the **Type** field. **b)** If entered numbers must have a fixed number of decimals to be accepted, select the number of decimals. **c)** If entered numbers must fall within a range to be accepted, enter the maximum and minimum values of the range.

Option	Steps
To create a numerical item with a selection list. **Note:** A minimum of 2 items must be added to create a list.	**a)** In the **Type** field, select "Numerical". **b)** Select the **Use selection list** check button. **c)** Tap the **Add** button. **d)** Enter a text. **e)** Do steps "a" to "d" again for each item you want in the selection list.

5. Tap the **Back** > **Close** buttons.

Report layout for LCR measurements

Measurements done in connection with calibration verification in the USA are referred to as calibration verification and reportable range (LCR) measurements.

It is necessary to select a report layout that contains the "Measurement type" data item before you can do an LCR measurement. An alternative is to create a special layout for LCR measurements that contains the "Measurement type" data field. We recommend that the layout also contains a data field for the name and level of the LQC material.

Related information
To create a report layout for LCR measurements, page 62

Patient result settings

To create a layout for patient results

This procedure tells you how to create a layout for patient results for a selected patient ID / report layout.

1. Tap **Menu** > **Utilities** > **Setup** > **Analysis setup** > **Patient reports**.
2. Select a patient ID / report layout.
3. Tap the **Edit patient results layout** button.
4. In the **Available items** field, select a parameter.

   Note: Parameters will be shown in the results as they are shown in the **Selected items** field.
5. Tap the right arrow button.
6. Do steps 4 and 5 again for each parameter.
7. To change the position of a parameter in the **Selected items** field:
   a) Select the parameter.
   b) Tap the left arrow button.
   c) In the **Selected items** field, select the parameter you want the selected parameter to follow.
   d) Tap the right arrow button.
8. To show the reference range of a parameter with patient results:
   a) In the **Selected items** field, select a parameter.
   b) Tap the **Show ranges** button.
   c) If necessary, do steps "a" and "b" again for other parameters.
9. If necessary, do steps 2 to 8 again for other patient ID / report layouts.
10. Tap the **Back** > **Close** buttons.

To enable patient result approval

Only complete patient results can be approved or rejected. For details, see the procedure to set up automatic transmission of patient results to a system.

When patient result approval is enabled, complete patient results must be either approved or rejected, otherwise they will not be sent to a connected LIS/HIS system.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Enable patient result approval** check button.
3. Tap the **Close** button.

Parameter settings

To show the parameter bar

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Show parameter bar** check button.
3. Tap the **Close** button.

To hide the parameter bar

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Deselect the **Show parameter bar** check button.
3. Tap the **Close** button.

To enable/disable a parameter

When you disable a parameter, it will not be shown on the parameter bar. You will not be able to calibrate the parameter or measure the parameter in patient samples or LQC material.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **Parameters**.
2. Select the parameter.
3. Tap the **Enable/disable** button.

   Note: The first value in the **Enabled/locked** column must be “Yes” to enable the parameter, and “No” to disable it.
4. Tap the **Close** button.

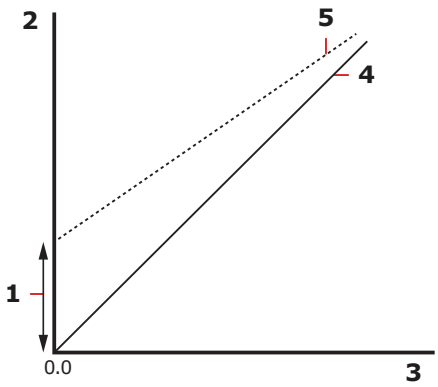
To set up measurement units for parameters

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **Units**.
2. Use the scroll buttons to select the field adjacent to the parameter.
3. In the **Possible units** frame, select the unit.
4. Tap the **Close** button.

Calibration adjustment settings

User-defined offset and slope corrections

User-defined corrections refer to corrections made to the offset and slope of parameters.



1 Offset

2 Displayed (corrected) parameter value (y axis)

3 Measured (uncorrected) parameter value (x axis)

4 Correction line without user-defined corrections (slope = 1, offset = 0)

5 Correction line with user-defined corrections

The diagram shows the relation between correction lines without and with user-defined corrections.

User-defined corrections are most commonly applied when the values measured for a parameter by two or more analyzers deviate consistently from each other.

User-defined corrections are based on a linear correlation between the measured values (without user-defined corrections) and the shown values (with user-defined corrections).

The correction factors for each measured parameter are the slope and the offset of the correction line. With user-defined corrections it is possible to change the values of the slope and offset or only change the value of only one of them. This depends on the parameter.

Corrected value = Slope × Uncorrected value + Offset

Before you enter corrections for a parameter, you must have the reference value for the parameter. Use a procedure accepted in your laboratory to get the reference value.

Here are some more prerequisites.

- Analyses must be done on the analyzer without the use of user-defined corrections and on one reference analyzer.
- Analyses must be done over the full measuring range.
- Analyses must be done on the analyzer and on the reference analyzer at the same time, and the samples must be handled correctly.

- The slope and the offset must be calculated. The user may, for example, make a linear correlation between the values measured on the analyzer and the reference analyzer. The analyzer is then used as an independent variable.
- The user must verify the corrections entered.

To edit the offset and slope for a parameter

Changes made to the offset and slope for a parameter are only applied to patient results. If you want to apply the corrections to LQC results, you must set it up as a corrective action on LQC results.

During this procedure, the analyzer uses the entered **Correction offset** and **Correction slope** values to calculate the new reportable range. Patient results that fall outside the new, calculated reportable range are reported as greater than the upper limit or less than the lower limit of this range. The limits of this range are not shown in the **Reportable ranges** screen.

Note: During this procedure, the reference range and critical limits of the selected parameter are deleted.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **Parameters**.
2. Select the parameter.
3. Tap the **Edit** button.
4. If necessary, enter a new value for **Correction offset**.
5. If necessary, enter a new value for **Correction slope**.
6. Tap the **Back** > **Close** buttons.
7. If necessary, set up the reference range and/or critical limits for the parameter.

Related information
To apply user-defined corrections to LQC results, page 128

To limit when calibration adjustments can be stopped

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. In the **Calibration adjustment** frame, set the time in minutes.

   Note: If you select zero minutes, calibration adjustments in progress cannot be stopped.
3. Tap the **Close** button.

Quality control

Edit data about registered LQC material

To edit data about registered LQC material

This procedure explains how to change the name of LQC material, and for each parameter change these items:

- The user-defined control range
- The parameters to measure when the LQC material is used

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material you want to edit.
3. Tap the **Edit LQC setup** button.
4. If necessary, edit the name.
5. If necessary, change the user-defined control range of all parameters to lot-to-date values, tap the **Update all** button.
6. If necessary, change the user-defined control ranges of a parameter as follows:

   a) Select the parameter.
   b) Tap the **Edit (2)** button.
   c) Enter a new value for the lower and/or upper limits of the user-defined control range for the parameter.

   Note: The values must be within the **Assigned Control range** for the parameter.
7. If necessary, exclude a parameter from the measurement as follows:

   a) Select the **Exclude parameter** check button.
8. If necessary, tap the **Next Param.** or **Prev. Param.** button to select a new parameter and do steps 6b), 6c) and step 7 again.
9. Tap the **Back** > **Back** > **Close** buttons.

To change the user-defined control range of a parameter

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material you want to edit.
3. Tap the **Edit LQC setup** button.
4. Select the parameter.
5. Tap the **Edit (2)** button.
6. Enter a new value for lower and/or upper limits of the user-defined control range for the parameter.

   Note: Values must be within the assigned control range for the parameter.
7. If necessary, tap the **Next Param.** or **Prev. Param.** button to select a new parameter.
8. Do steps 5 and 6 again.
9. Tap the **Back** > **Back** > **Close** buttons.

To set up fixed standard deviations (SD) for use when updating ranges

This procedure lets you set a fixed SD to make sure that user-defined control ranges are not made too narrow when they are changed to lot-to-date ranges.

Note: When a fixed SD is set up for use when updating ranges, the limits of user-defined control ranges cannot be changed to values that are within the range determined by the fixed SD.

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material you want to edit.
3. Tap the **Edit LQC setup** button.

4. To fix the standard deviation for a parameter:
   a) Select the parameter.
   b) Tap the **Edit (2)** button.
   c) Select the **Use fixed SD when updating ranges** check button.
   d) Tap in the **SD** field.
   e) Enter a value in the **SD** field.
   f) If necessary, tap the **Next Param.** or **Prev. Param.** button to select a new parameter and do steps 4c) and 4d) again.
5. Tap the **Back** > **Back** > **Close** buttons.

Calculation of lot-to-date control ranges

The analyzer calculates a lot-to-date control range as follows:

It uses all successful QC results to calculate the mean value and standard deviation (SD) value of a parameter and calculates the lot-to-date range as follows:

Calculated **Lot-to-date range** = [Mean value] ± [2 × calculated SD value]
The analyzer then looks to see whether a fixed **SD** value has been set up for use when updating the control range.

- If no fixed **SD** value has been set up, the **User-defined** control range will be changed to the calculated **Lot-to-date range**
- If a fixed **SD** value has been set up and it is greater than the calculated SD value, the **User-defined** control range is calculated and changed as follows:

  User-defined control range = [Mean value] ± [2 × (fixed **SD** value)]

  This makes sure that the **User-defined** control range is not made too narrow.

To change user-defined control ranges to lot-to-date ranges

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material you want to edit.
3. Tap the **Edit LQC setup** button.
4. To change the user-defined control range of all parameters to lot-to-date values, tap the **Update all** button.
5. To change the user-defined control range of one parameter to lot-to-date values:
   a) Select the parameter.
   b) Tap the **Edit (2)** button.
   c) Tap the **Update** button.
   d) If necessary, tap the **Next Param.** or **Prev. Param.** button to select a new parameter.
   e) Do steps 5c) and 5d) again.
6. Tap the **Back** > **Back** > **Close** buttons.

To select the parameters to be measured

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material you want to edit.
3. Tap the **Edit LQC setup** button.
4. Select a parameter that can be measured when the selected LQC material is used.
5. Tap the **Edit (2)** button.
6. Choose an option and follow the steps for it.

Option	Steps
To include measurement of the parameter	Deselect the **Exclude parameter** check button.

Option	Steps
To not include measurement of the parameter	Select the **Exclude parameter** check button.

7. If necessary, tap the **Next Param.** or **Prev. Param.** button to select a new parameter.
8. Do steps 6 and 7 again.
9. Tap the **Back** > **Back** > **Close** buttons.

Scheduled LQC measurements

To schedule LQC measurements

Prerequisite(s)

- The LQC material is registered

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material to use for scheduled measurements.
3. Tap the **LQC schedule** button.
4. Select the day and the time to start scheduled measurements.
5. Tap the **Add** button.
6. Select how often the measurements must be done as follows:
   a) Tap the **Repeat** field.
   b) Select a value from the field on the right of the screen.
   c) Tap the **Select** button.
7. Tap the **Back** > **Back** > **Close** buttons.

To edit an LQC measurement schedule

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC**.
2. Select the LQC material to be used for scheduled measurements.
3. Tap the **LQC schedule** button.
4. Select the scheduled measurement you want to edit.
5. Tap the **Edit** button.
6. Choose an option and follow the steps for it.

Option	Steps
To change the days of the week measurements must be done	**a)** Tap in the **Weekdays** field. **b)** Select check buttons for the days, in the field on the right of the screen.
To change the start time for measurements	**a)** Tap in the **Start time** field. **b)** Enter a new start time.
To change how frequently measurements must be done	**a)** Tap in the **Repeat** field. **b)** Select a value from the field on the right of the screen.

7. Tap the **Back** > **Back** > **Close** buttons.

To set up corrective actions for overdue scheduled LQC measurements

This procedure lets you set up the analyzer to lock parameters when scheduled LQC measurements are overdue. The procedure also lets you select the traffic light color to show when LQC measurements are overdue.

Note: When the analyzer is set up to lock parameters when scheduled LQC measurements are overdue and LQCs for all parameters are overdue, the analyzer will go into **QC locked** mode. In this mode, no patient samples can be analyzed until overdue scheduled LQC measurements are successfully completed.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Corrective actions**.
2. Select the condition "LQC schedule reminder(s)".
3. Make sure the check button in the **Corrective action** frame is deselected.
4. Tap the traffic light button to select the color you want.
   This is only possible if you do not do step 5.
5. Select the **Lock parameter(s) when a scheduled LQC activity is XX % overdue** check button.
   If you do this step, the traffic light will be set to yellow and you will not be able to change it.
6. Select a value for XX %.
7. Tap the **Close** button.

Example

If the value selected for XX % is 25 %, LQC measurements scheduled to be done once a day (every 24 hours) at 10:00 a.m. become overdue 25 % × 24 = 6 hours later, that is at 4:00 p.m. If the LQC measurement is not done by 4:00 p.m. the analyzer will lock the parameters that the LQC material was registered to measure.

Corrective actions on LQC results

To set up corrective action for errors in LQC results

This procedure lets you set up the analyzer to lock parameters with errors in LQC results.

Note: When this corrective action is set up, the analyzer will go into **QC locked** mode when there are errors in the LQCs for all parameters. In this mode, no patient samples can be analyzed until overdue scheduled LQC measurements are successfully completed.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Corrective actions**.
2. Select the condition "LQC error(s) present".
3. Select the **Lock parameter(s)** check button.
   Note: If the condition occurs, the traffic light color changes to yellow.
4. Tap the **Close** button.

To apply user-defined corrections to LQC results

User-defined corrections refer to corrections made to the offset and slope for parameters.

Note: Radiometer recommends that corrections are NOT applied to LQC results. If corrections are applied, assigned control ranges will have to be calculated again and it will not be easy to compare LQC results with peer laboratories.

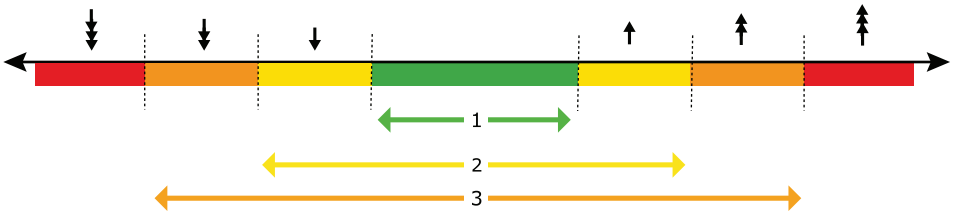
1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Apply user-defined parameter-corrections to LQC results** check button.
3. Tap the **Close** button.

Related information
To edit the offset and slope for a parameter, page 124

LQC statistics

About control and statistical ranges

LQC results are marked by symbols to show where they fall in relation to the control range, the statistical range and the reportable range. The diagram illustrates these relationships.



1 Control range of the LQC material

2 Statistical range

3 Reportable range of the parameter

To set the statistical factor and a reminder to print

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **LQC statistics**.
2. If necessary, enter a new value In the **Statistical factor used for value acceptance** field.

   Note: The value is set by default to 1.5, but can be changed to a value between 1.0 and 9.9.
3. If you want the analyzer to send a reminder to print LQC statistics at the end of each month, select the check button.
4. Tap the **Close** button.

To enable Levey-Jennings plots to be viewed

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Enable viewing of Levey Jennings plot** check button.
3. Tap the **Close** button.

Westgard Rules

About Westgard rules

Westgard Rules are a set of control rules that can be applied to LQC results to help you do two things:

- Find errors in LQC results. The symbol "W" is used to show when LQC results have violated applied Westgard Rules.
- Find shifts or trends in LQC results. This helps you assess the quality and validity of patient sample analyses.

Types of Westgard rules

There are two types of rule.

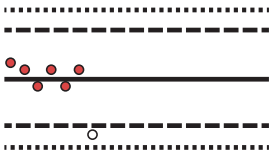
- Warning rules. Rule 1_{2s} is the only warning rule.
- Rejection rules. Rules 1_{3s}, 2_{2s}, R_{4s}, $R4_{1S}$ and 10_x are rejection rules.

Description of the lines used in Westgard rule illustrations

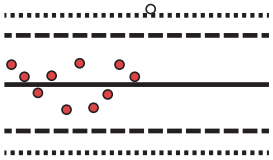
Line type	Description
.....	Shows ±3 SD ranges
_ _ _	Show control ranges (±2 SD)
_____	Shows the mean value

Westgard rules and corrective actions

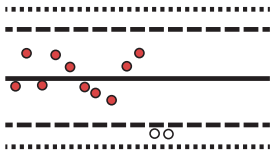
Rule 1:2s (also written 1_{2s}) is the only warning rule.

Westgard rule 1_{2s}		Corrective action
The LQC result falls outside the mean ±2 SD range		Do a new measurement with LQC material of the same type, level and lot number. • If the new result does not exceed the mean ±2 SD, the original LQC result can be attributed to normal statistical variation. • If the new result exceeds the mean ±2 SD, do what is necessary to comply with your local QC regulations.

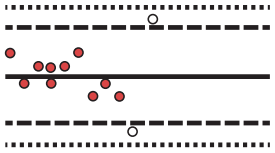
Rule 1:3s (also written 1_{3s}) is a rejection rule.

Westgard rule 1_{3s}		Corrective action
The LQC result falls outside the mean ±3 SD range		Do a new measurement with LQC material of the same type, level and lot number. • If the new result does not exceed the mean ±3 SD, the original LQC result can be attributed to normal statistical variation. • If the new result exceeds the mean ±3 SD, do what is necessary to comply with your local QC regulations.

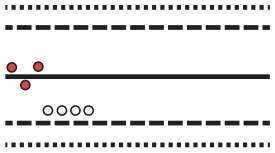
Rule 2:2s (also written 2_{2s}) is a rejection rule.

Westgard rule 2_{2s}		**Corrective action**
Two consecutive LQC results are outside and on the same side of the mean ±2 SD range		Do what is necessary to comply with your local QC regulations.

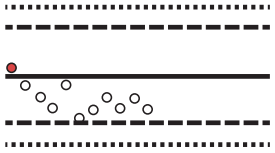
Rule R:4s (also written R_{4s}) is a rejection rule.

Westgard rule R_{4s}		**Corrective action**
The difference between two consecutive LQC results exceeds 4 SD	 This indicates inconsistency in your QC procedures or an unstable analyzer.	Do what is necessary to comply with your local QC regulations.

Rule 4:1s (also written 4_{1s}) is a rejection rule.

Westgard rule 4_{1s}		**Corrective action**
Four consecutive LQC results are outside and on the same side of the mean ±1 SD range	 This indicates a trend or shift.	Do what is necessary to comply with your local QC regulations.

Rule 10:x (also written 10_x) is a rejection rule.

Westgard rule 10_x		**Corrective action**
Ten consecutive LQC results are on the same side of the mean value	 This indicates a trend or shift.	Do what is necessary to comply with your local QC regulations.

To set up Westgard rules

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **Westgard Rules**.
2. Tap the **Next position** button to select the LQC material.
3. Make sure that there is a checkmark on the **Apply WR** button.
4. Tap the **Select all** button to apply all the Westgard rules to the LQC results for all parameters.
5. Tap the **Continue** button.

6. If you only want to apply some Westgard rules to the LQC results of some parameters, do as follows:
   a) Select the parameter you do not want to apply some Westgard rules to.
   b) Tap the **Edit** button.
   c) Deselect the check buttons of the rules you do not want to apply.
   d) If necessary, tap the **Next param.** or **Prev. param.** button to select a new parameter and do step "6c" again.
7. Tap the **Back** > **Close** buttons.

To apply Westgard Rules to LQC results

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **Westgard Rules**.
2. Make sure that there is a checkmark on the **Apply WR** button. If there is no checkmark, tap the button.
3. Tap the **Close** button.

RiLiBÄK rules

About RiLiBÄK rules

RiLiBÄK rules are guidelines of the German Federal Medical Council. The rules provide minimum requirements for the quality of quantitative test results in medical laboratories. RiLiBÄK rules are not set up by default.

To access the RiLiBÄK ranges setup screen

In the **RiLiBÄK ranges setup** screen you can add, edit or remove RiLiBÄK rules.

This procedure gives you access to the **RiLiBÄK ranges setup** screen. The procedure also applies rules for the parameters that have the value "On" in the **On/Off** column of the **RiLiBÄK ranges setup** screen.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Enable RiLiBÄK ranges** check button.
3. Tap the **Close** button.

To apply RiLiBÄK rules that are “On”

This procedure lets you apply rules for the parameters that have the value “On” in the **On/Off** column of the **RiLiBÄK ranges setup** screen. The procedure also gives you access to the **RiLiBÄK ranges setup** screen.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Miscellaneous setup**.
2. Select the **Enable RiLiBÄK Ranges** check button.
3. Tap the **Close** button.

To add a new RiLiBÄK rule

Prerequisite(s)

- The **RiLiBÄK ranges setup** screen can be accessed

This procedure adds a new rule and sets its **On/Off** value to "On".

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **RiLiBÄK Ranges**.
2. Tap the **Add** button.
3. Select the parameter you want.
4. Tap in the first field in the **Lower limit (Valid range)**.
5. Enter the value of the lower limit.
6. Tap in the second field in the **Lower limit (Valid range)**.
7. Tap "<" or "<=".
8. Tap in the first field in the **Upper limit (Valid range)**.
9. Tap "<" or "<=".
10. Tap in the second field in the **Upper limit (Valid range)**.
11. Enter the value of the upper limit.
12. Choose an option and follow the steps for it.

Option	Steps
To use a percentage to calculate the acceptable deviation from the assigned value. **Note:** This is most frequently used.	• Select the **+/- Ranges [%]** button. • Enter the percentage value in the **Ranges** field.
To use an absolute value to calculate the acceptable deviation from the assigned value	• Select the **+/- Ranges** button. • Enter the absolute value in the **Ranges** field.

13. Tap the **Back** button.

    Note: The rule is shown in the screen. The **On/Off** value is set by default to "On".
14. Do steps 2 to 13 again for each rule you want to add.

    Note: More than one rule can be added for a parameter as long as the valid ranges of each rule do not overlap.
15. Tap the **Close** button.

To edit a RiLiBÄK rule

Prerequisite(s)

- The **RiLiBÄK ranges setup** screen can be accessed

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **RiLiBÄK Ranges**.
2. Select the rule you want to edit.
3. Tap the **Edit** button.
4. Edit the values.
5. If necessary, choose an option and follow the steps for it.

Option	Steps
To use a percentage to calculate the acceptable deviation from the assigned value. **Note:** This is most frequently used.	• Select the **+/- Ranges [%]** button. • Enter the percentage value in the **Ranges** field.

Option	Steps
To use an absolute value to calculate the acceptable deviation from the assigned value	• Select the **+/- Ranges** button. • Enter the absolute value in the **Ranges** field.

6. Tap the **Back** > **Close** buttons.

To remove a RiLiBÄK rule

Prerequisite(s)
- The **RiLiBÄK ranges setup** screen can be accessed

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **RiLiBÄK Ranges**.
2. Select the rule you want to remove.
3. Tap the **Delete** button.
4. Tap the **OK** button.
5. Tap the **Close** button.

To set the On/Off value of a RiLiBÄK rule to "Off"

Prerequisite(s)
- The **RiLiBÄK ranges setup** screen can be accessed

1. Tap **Menu** > **Utilities** > **Setup** > **LQC setup** > **RiLiBÄK Ranges**.
2. Select the rule you want to disable.
3. Tap the **On/Off** button to deselect the selected rule.
4. Make sure that the value in the **On/Off** column has changed to "Off".
5. Tap the **Close** button.

System check

About system check

System check is a series of automatic test sequences that can be done on request by the analyzer or scheduled to be done automatically. System-check results are saved in the **System-check log**. Results show the status of the test sequences. Results can be printed and/or exported as comma-separated files.

Note: No sample is necessary to do a system check.

To schedule automatic system checks

1. Tap **Menu** > **Utilities** > **Setup** > **System-check schedule**.
2. Select the **Automatic system-check** check button.
3. Tap in the **Start time** field.
4. Enter the time you want the first system check to start.
5. Tap in the **Repeat interval** field.
6. Select how frequently you want system checks to be done.

   Note: Radiometer strongly recommends that a system check is scheduled to be done every day.
7. Tap the **Close** button.

Maintenance setups

Mandatory maintenance setups

About mandatory maintenance activities

Mandatory maintenance activities are scheduled activities that must be done. The activities are set up with default counter values that determine how frequently the activities must be done. The counter value is the number of times the analyzer needle is used to aspirate samples from tubes since the activity was last done. Two counter values are set, a **Warning limit**, and a **Critical limit**. You can change the values set for warning limits. You can also schedule activities to be done with a frequency determined by time.

If an activity is not done before the counter value gets to the warning limit, a message is sent as a reminder to do the activity. If the activity is not done before the counter value gets to the critical limit, the analyzer goes into **Maintenance** mode until the activity is successfully completed.

To edit the warning limits for mandatory maintenance activities

You can change the values set for warning limits.

1. Tap **Menu** > **Utilities** > **Setup** > **Other activities setup** > **Other activities schedule**.
2. In the lower part of the screen, select the activity you want to change the limits of.
3. Tap the **Edit** button.
4. If necessary, enter a new warning limit.
5. Tap the **Back** > **Close** buttons.

To schedule mandatory maintenance activities by time

1. Tap **Menu** > **Utilities** > **Setup** > **Other activities setup** > **Maintenance schedule**.
2. In the top part of the screen, select the activity.
3. Tap the **Edit** button.
4. Select the frequency for the activity in the **Interval** field.

   Note: The next activity is planned to be done immediately.
5. Tap in the **Days** field.

   Note: This field is not available if you selected "Never" or "Daily" in the **Interval** frame.
6. Select the days of the week you want the activity to be done.
7. Tap the **Back** > **Close** buttons.

To set up corrective action for overdue mandatory maintenance activities

Prerequisite(s)

- The maintenance activity is scheduled by time

This procedure lets you set up the analyzer to lock when a scheduled maintenance activity is more than 10 % overdue.

For example: If an activity is scheduled to be done once a week and the activity is not done [7 days + (10 % of 7 = 0.7) day] = 7.7 days after the activity was last done, the analyzer locks. The lock is removed when the overdue activity is done.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Corrective actions**.
2. Select the condition "Maintenance schedule reminder(s)".
3. Select the **Lock the analyzer when the selected condition is XX% overdue** check button.

   Note: If the condition occurs, it is recorded as a critical issue and the color of the traffic light in the **Analyzer status** button changes to red.
4. Tap the **Close** button.

To set up corrective action for overdue scheduled system cleans

Prerequisite(s)

- The system-clean activity is scheduled by time

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Corrective actions**.
2. Select "System clean schedule reminder".
3. Select the **Lock the analyzer when the selected condition is XX% overdue** check button.
4. Select a value for **XX %**.

   This is a percentage of the **Interval** selected in the **Edit maintenance schedule** screen for "System clean".

   For example, if the activity is scheduled to be done once a week and the activity is not done [7 days + (10 % of 7 = 0.7) day] = 7.7 days after the activity was last done, the analyzer locks. The lock is removed, when the overdue activity is done.
5. Tap the **Close** button.

Related information
To edit the warning limits for mandatory maintenance activities, page 135

Operator-defined maintenance setups

About operator activities

Operator activities are activities you can set up and schedule to be done at regular intervals of time. For example, to clean the touch screen and analyzer exterior. When a scheduled activity is due, a message is sent as a reminder to do the activity.

To add a new operator activity

1. Tap **Menu** > **Utilities** > **Setup** > **Other activities setup** > **Operator activities**.
2. Tap the **Add** button.
3. Enter a name for the activity.

4. Select the frequency for the activity in the **Interval** field.

   Note: The selected interval is used to calculate the next planned date = [current date] + [selected interval]. If you want to use another date to calculate the next planned date, do steps 5 and 6, otherwise go to step 7.
5. Tap the **Next date** field.
6. Enter a date.
7. Tap the **Back** > **Close** buttons.

To set up corrective action for pending operator activities

This procedure lets you set up the analyzer to change the color of the traffic light in the **Analyzer status** button to remind operators about pending operator activities.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Corrective actions**.
2. Select the condition "Operator-activity reminder(s)".
3. Tap the button with the traffic light icon to select the color you want to show.
4. Tap the **Close** button.

To delete an operator activity

1. Tap **Menu** > **Utilities** > **Setup** > **Other activities setup** > **Operator activities**.
2. Select the activity.
3. Tap the **Delete** button.
4. Tap the **Continue** button.
5. Tap the **Close** button.

Replacement warnings setup

To set up replacement warnings

- For installed Test Cartridges: You can set up the analyzer to send a replacement warning message some days before the number of valid tests fall below a specified value.
- For the installed Solution Pack: You can set up the analyzer to send a replacement warning message some days before the Solution Pack expires and/or when the remaining cup capacity of the Solution Pack falls below a specified value.

Note: Cartridges and Solution Packs are valid until their expiry date or on-board expiry date.

1. Tap **Menu** > **Utilities** > **Setup** > **Other activities setup** > **Replacement warning**.
2. To set up a replacement warning message for installed Test Cartridges:

   a) In the **if remaining tests will fall below** field, select the number of valid tests you want to be available in X days' time.

   b) In the **in:** field, select a value for X.

   Note: When the number of valid tests fall below this value, a replacement warning message is sent.

3. To set up a replacement warning messages for the installed Solution Pack:
   a) In the **if Solution Pack cup capacity falls below** field, select the minimum number of cups the Solution Pack must have the capacity for before a replacement warning message is sent.
   b) In the **in:** field, select how many days before the Solution Pack expires you want a replacement warning message to be sent.
4. Tap the **Close** button.

Note fields

To create standard texts for use in Note fields

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **User-defined notes**.
2. Select the check button for the screen where standard text is necessary for the **Note** field.

   Note: The **Next page** button lets you select check buttons for other screens.
3. Make sure that the top right corner of the selected check button is black.
4. Tap the **Add new** button.
5. Enter the standard text.
6. Do steps 3 and 4 again for each standard text you want to add.
7. Tap the **Close** button.

To edit standard texts for use in Note fields

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Parameters and input** > **User-defined notes**
2. Select the note you want to edit.
3. Tap the **Edit** button.
4. Edit the note.
5. Tap the **Close** button.

Communications

Patient profiles log

A patient profile contains data that helps to identify a patient.

Data entered in the **Patient identification** screen during a sample analysis is saved in the **Patient profiles log**.

When the **Patient ID** field in the **Patient identification** screen is filled in, patient profile data is automatically downloaded to the screen from the log.

Note: If the analyzer is set up to automatically request patient data from a LIS/HIS/data management system, the received data updates existing data in the screen and the log.

Patient data from LIS/HIS or AQURE/RADIANCE systems

Patient data can be downloaded to the analyzer from a connected LIS/HIS or AQURE/RADIANCE system.

You can set up the analyzer to request patient data automatically from the system, or let operators request patient data manually. There are 2 options for manual requests:

- Fill in the **Patient department** field in the **Patient identification** screen, lookup, find and request the patient data.

  Note: To use this option, you must enable patient lookup and set up a connection to a LIS/HIS or AQURE/RADIANCE system.
- Fill in the **Accession number** or **Patient ID** field in the **Patient identification** screen and request the patient data.

  Note: To use this option, you must set up a connection to a LIS/HIS or AQURE/RADIANCE system.

To set up a LIS/HIS connection

Prerequisite(s)

- The analyzer is connected by cable to the LIS/HIS system

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Communications** > **LIS/HIS connection**.
2. Tap the **Add** button.
3. Enter a name for the connection.
4. Tap the **Back** button.
5. Select the high-level protocol used by the LIS/HIS system.
6. Choose an option and follow the steps for it.

Option	Description
To set up a serial low-level protocol	**a)** Select a serial setting **b)** Tap the **Edit** button. **c)** Make sure the settings shown in the **Connection setup** frame are correct for the LIS/HIS system. **Note:** The **Port number** must be set to "COM1". **d)** If the settings are not correct, tap the **Edit** button. **e)** Change the settings. **f)** Tap the **Back** > **Back** > **Close** buttons.
To set up a network low-level protocol	**a)** Select a network setting. **b)** Tap the **Edit** button. **c)** If necessary, change the settings. **d)** Tap the **Back** > **Close** buttons.

To set up an AQURE/RADIANCE connection

Prerequisite(s)

- The analyzer is connected to the AQURE/RADIANCE system via a server

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Communications** > **Radiance connection**.
2. Enter the address of the AQURE/RADIANCE server the analyzer is connected to.
3. Enter the number of the AQURE/RADIANCE server port the analyzer is connected to.
4. Enter the password the analyzer was given to access the AQURE/RADIANCE system.

5. Select the **Communicate with the Radiance system** checkbox.
6. Tap the **Close** button.
   An icon at the bottom of the analyzer screen shows if there is a connection or not.

Icon	Explanation
	There is a connection between the system and the analyzer
	There is no connection between the system and the analyzer

To set up automatic requests for patient data

Prerequisite(s)

- A connection is set up to the LIS/HIS or AQURE/RADIANCE system that patient data is to be requested from

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Communications** > **Automatic data request**.
2. Select the connection to the system that patient data is to be requested from.
3. In the **Request patient demographics** frame, select the check button for the data field in the **Patient identification** screen that when filled in will automatically request patient data from the system.

   Note: It is possible to select more than one check button, but Radiometer recommends that you only select one.
4. Tap the **Close** button.

To set up automatic transmission of results to a system

Prerequisite(s)

- A connection is set up to the LIS/HIS/data management system that data is to be sent to

Note: If the analyzer is connected to a RADIANCE system, software version > 15 or equal to 15.0 must be installed.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Communications** > **Automatic data transmission**.
2. Select the name of the connection.
3. Select the check buttons for the data to be automatically sent.

   Note: For a LIS/HIS connection: You can select **Patient results (complete)** or **Patient result (single)**, but not both. If you select **Patient results (complete)**, test results are only sent when the result of all ordered tests are available. You can approve or reject complete patient results. If you select **Patient result (single)**, each test result is sent when it is available. You cannot approve or reject single test results.

   Note: The RADIANCE system is only set up to receive **Patient results (complete)** and **LQC results**.
4. Tap the **Close** button.

FLEXLINK modules

The FLEXLINK module is a PC-compatible RADIANCE software module. The module is used at point of care to enter patient data and order tests on patient samples. The data is automatically sent to a connected AQT90 FLEX system. The analyzer reads the barcode on the patient sample tube when it is put in the tube holder and automatically requests data from the AQT90 FLEX system. The data is used to fill in data fields in the **Patient identification** screen and select the tests to be done. This decreases the time

used to identify samples and decreases errors that can occur when data is filled in manually.

To enable the use of FLEXLINK modules

1. Set up a connection to a RADIANCE system.
2. Set up automatic requests for patient data as follows:
   a) Select a "RADIANCE" in the **Connection** field.
   b) Select check buttons for the data that must be entered before patient data can be requested from the connected RADIANCE system.
3. Make sure that the barcode on sample tubes is set up to be interpreted as an "Accession number".
4. Set up automatic transmission of patient data as follows:
   a) If you want patient results to be automatically sent to the RADIANCE system, make sure that " RADIANCE" is selected as the connection.

To access the RADIANCE system from the analyzer

Prerequisite(s)

- A connection is set up to the RADIANCE system

Access to the RADIANCE system is available on request. Contact your local Radiometer service representative.

1. Make sure the RADIANCE icon shows there is connection between the analyzer and the RADIANCE system. 
2. Tap **Menu** > **Utilities** > **Radiance browser**.

   Note: See the *RADIANCE system, User's manual* for instructions.

Printers

To set up automatic printing

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Printers** > **Automatic printing**.
2. Select the check buttons for the data you want to be printed automatically.
3. Select the number of copies of patient results that must be printed.
4. Make sure that **User** button is selected.
5. Tap the **Close** button.

To enable test results to be printed immediately

This procedure lets you print patient test results when they become available.

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Printers** > **Automatic printing**.
2. Make sure that the **Patient results** check button is selected.
3. Select the **Enable immediate reporting** check button.
4. Tap the **Close** button.

To install a new printer for the analyzer

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Printers** > **Printer setup**.
2. Tap the **Install printer** button and follow the instructions shown on the screen.
3. If necessary, tap the **Edit name** button and enter the new name.
4. Do step 3 again for each printer you want to install.

   Note: Radiometer recommends that a maximum of 10 printers are installed.
5. Choose an option and follow the steps for it.

Option	Steps
To print data on the same printers each time	**a)** Select the printer. **b)** Tap the **Select/deselect** button. **c)** Make sure a check mark is shown adjacent to the printer name. **d)** Do steps a) to c) again for each printer.
To get a list of the installed printers before you print data	Select the check button in the **Manual printing** frame.
To print data on all installed printers	Make sure that the check button in the **Manual printing** frame is deselected.

6. Tap the **Close** button.

To remove a printer from the setup

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Printers** > **Printer setup**.
2. Select the printer.
3. Tap the **Remove** button.
4. Tap the **Close** button.

To edit the name of a printer

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Printers** > **Printer setup**.
2. Select the printer.
3. Tap the **Edit name** button, and enter the new name.
4. Tap the **Close** button.

Data logs and archives

About data logs and archived data logs

The analyzer can be set up to automatically save data logs to archives on the analyzer or on an external device. Data is moved to the archives when the data logs are full.

You can export data logs and archived data logs manually and save them on an external device. You can also import archives from other AQT90 FLEX analyzers.

To set up automatic archiving

1. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Disk functions setup** > **Automatic archiving**.
2. Select the check buttons for the data logs that you want to be archived.
3. Choose an option and follow the steps for it:

Option	Steps
To archive the data logs on the analyzer	**a)** Select the **Store archives on the analyzer** check button. **b)** Tap the **Close** button. **Note:** The data is saved on the D: drive.
To archive the data logs to a different destination	**a)** Tap the button with the folder icon. **b)** Select the folder where the data logs must be archived. **c)** Tap the **Back** > **Close** buttons.

File format of exported data logs

The format of exported data logs is a compressed Comma Separated Value (CSV) file. The CSV file can be read by database and spreadsheet programs. For example: Microsoft Excel, Access and Lotus 1-2-3.

However, archived data logs can also be exported as .bin files. The .bin files are encrypted. If you want to read them, you must import them to the analyzer.

To export data logs

Note: Data logs are not removed from the analyzer during this procedure. The exported data logs are only copies.

1. Make sure that there is a connection between the analyzer and the device to which the logs are to be exported.
2. Tap **Menu** > **Utilities** > **Disk functions** > **Export data logs**.
3. Deselect the check buttons for the data logs that you do not want to export.
4. Tap the button with the calendar icon in the **Date interval** frame.
5. Enter a date in the **From** and **To** fields.
6. Tap the **Back** button.
7. Tap the button with the folder icon in the **Destination** frame.
8. Select the folder to export data logs to.
9. Tap the **Back** button.
10. Tap the **Accept** button.
11. Tap the **Start** button.

To export data from archived data logs

This procedure lets you export part of an archived data log from the analyzer in .csv format.

1. Make sure that there is a connection between the analyzer and the device to which the archive is to be exported.
2. Tap **Menu** > **Data logs** > **Archived data logs**.
3. Select the archive type.

4. Tap the **Export archive** button.
5. Tap the button with the folder icon in the **Destination** frame.
6. Select the folder to export the archive to.
7. Tap the **Back** button.
8. Tap the **Accept** button.
9. Tap the **Start** button.
10. Tap the **Close** button.

To create disc space by exporting and deleting archives

This procedure lets you export archives to an external system and then delete them from the analyzer archive to create disc space.

1. Make sure that there is a connection between the analyzer and the device to which the archive parts are to be exported.
2. Tap **Menu** > **Utilities** > **Disk functions** > **Import/export archives**.
3. Select the archive type.
4. Select an archive.
5. Tap the button with the folder icon in the **Source/destination** frame.
6. Select the folder to export the archive parts to.
7. Tap the **Back** button.
8. Tap the **Export** button.
9. Select the archive that you selected in step 4, which you have just exported.
10. Tap the **Delete** button.
11. Do steps 3 to 10 again for each archive you want to export and delete.
12. Tap the **Close** button.

To import an archive

1. Make sure that there is a connection between the analyzer and the device that contains the archives.
2. Tap **Menu** > **Utilities** > **Disk functions** > **Import/export archives**.
3. Select the archive type.
4. Tap the button with the folder icon in the **Source/destination** frame.
5. Select the folder that contains the archives you want to import.
6. Tap the **Back** button.
7. Select one of the archives in the **Source/destination** frame.
8. Tap the **Import** button.
9. Tap the **Close** button.

Data backup and restoration

Backup

Note: It is the customer's responsibility to make sure that all valuable data is backed up regularly.

A backup includes all data logs and system files. Backup can be set up to be done automatically. The backup can also be done manually.

If data is lost or damaged, the backup will restore most of the data and keep data loss to a minimum.

Destinations for backup data

A backup can be saved to these destinations.

- The D:\ drive on the analyzer. This is where data is saved by default. The data on this drive cannot be overwritten.
- A USB flash drive
- An external CD drive
- A folder on an external network drive

Note: Radiometer recommends that backup data is saved to an external device.

To schedule automatic backups

1. Create a folder for the backup on the device on which the backup is to be saved.
2. Make sure that there is a connection between the analyzer and the device.
3. Tap **Menu** > **Utilities** > **Setup** > **General setup** > **Disk functions setup** > **Automatic backup**.
4. Select the **Automatic backup of all data and system files** check button.
5. Enter the time.
6. Enter the number of days between subsequent backups.
7. Tap the button with the folder icon.
8. Select the folder where the backup is to be saved.
9. Tap the **Back** > **Close** buttons.

To do a manual backup

1. Create a folder for the backup on the device on which the backup is to be saved.
2. Make sure that there is a connection between the analyzer and the device.
3. Tap **Menu** > **Utilities** > **Disk functions** > **Back up all data**.
4. Tap the **Change destination** button.
5. Select the folder where the backup is to be saved.
6. Tap the **Back** button.
7. Tap the **Start** button.
8. Look at the feedback message above the parameter tabs. The message will tell you when the backup is done.

   Note: A message is shown on the screen if the backup cannot be done.
9. Tap the **Close** button.

To restore data from a backup

Prerequisite(s)

- The latest backup

1. Make sure that there is a connection between the analyzer and the device that contains the backup.
2. Tap **Menu** > **Utilities** > **Disk functions** > **Restore all data**.
3. Tap the **Change source** button.
4. Select the folder that contains the backup.
5. Tap the **Back** button.
6. Tap the **Start** button.
7. Tap the **OK** button.

   Note: The analyzer will shut down and restart.

Saving and loading setups

To save the setup

1. Create a folder for the setup on the device on which the setup is to be saved.
2. Make sure that there is a connection between the analyzer and the device on which the setup is to be saved.
3. Tap **Menu** > **Utilities** > **Disk functions** > **Save setup**.
4. Tap the **Edit location** button.
5. Select the folder where the setup is to be saved.
6. Tap the **Back** button.
7. Tap the **Start** button.
8. Wait until a message tells you that the setup is saved.
9. Tap the **Close** button.

To load a setup

1. Make sure that there is a connection between the analyzer and the device from which the setup is to be loaded.
2. Tap **Menu** > **Utilities** > **Disk functions** > **Load setup**.
3. Choose an option and follow the steps for it.

Option	Steps
To load all parts of the setup	Tap the **Select all** button
To load one or more parts of the setup	**a)** Tap the **Deselect all** button. **b)** Select the part you want in the **Data selected for restore** field. **c)** Tap the  button. **d)** Make sure a check mark is shown in the checkbox. **e)** Do steps a) to d) again for each part you want.

4. Tap the **Change source** button.
5. Select the folder from which the setup is to be loaded.
6. Tap the **Back** button.
7. Tap the **Continue** button.

   Note: The analyzer will shut down and restart with the new setup.

To restore Radiometer default settings

1. Tap **Menu** > **Utilities** > **Disk functions** > **Restore default setup**.
2. Choose an option and follow the steps for it.

Option	Steps
To restore all default settings	Tap the **Select all** button.

Option	Steps
To restore one or more default settings	**a)** Tap the **Deselect all** button. **b)** Select the part you want In the **Data selected for restore** field. **c)** Tap the  button. **d)** Make sure a check mark is shown in the checkbox. **e)** Do steps a) to d) for each default setting you want to restore.

3. Tap the **Continue** button.

   Note: The analyzer will shut down and restart with the new setup.

Principles of operation 11

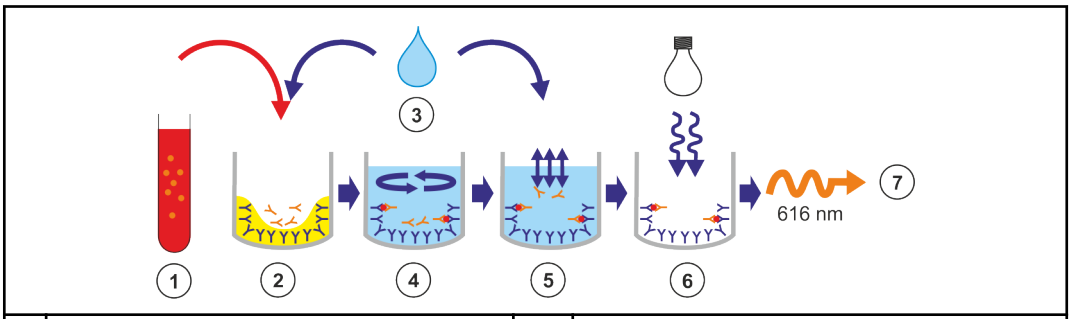
Immunoassays

The dry-chemistry concept for immunoassays

AQT90 FLEX immunoassays are based on a chemistry in which all the reagents are provided in a dry, stable form within an assay test cup. Biotinylated antibodies (Ab) have been immobilized on the streptavidin surface of the cup and a separating layer and europium-labeled tracer antibodies have been added on top of the biotinylated capture antibodies. The separating layer prevents the direct contact of the capture and tracer antibodies in storage.

The sample analysis process for immunoassays

The illustration shows the principles of the immunoassay process.



1	Whole blood	5	Washing
2	Ready to use test cup	6	Drying
3	Buffer solution	7	Quantitative result
4	Complex formation		

1. The sample wheel rotates to re-mix the sample in the sample tube.
2. A test cup for the selected parameter is punched out of a Test Cartridge and put into the incubator wheel.
3. A pre-determined volume of generic buffer solution (from the Solution Pack) is automatically added to the test cup containing the assay-specific reagents.
4. A volume of sample is aspirated from the sample tube.
5. The volume is checked to make sure that is correct (short sample detection).
6. A pre-determined volume of the aspirated sample is dispensed into the test cup.
7. The hematocrit value is determined on the rest of the sample.
8. The test cup and its contents are incubated at 37 °C and shaken for a period of time. The tracer and capture antibodies form a sandwich complex with the analyte (the parameter to be measured) present in the sample.
9. Buffer solution is then used to wash away excess free tracer antibodies, unreactive sample components and other material present in the cup leaving only the sandwich complex in the cup.

10. The cup is dried.
11. The time-resolved fluorescence of the europium-labeled sandwich complex from the dry surface of the assay cup is then measured.

    The concentration of the analyte/parameter is directly proportional to the measured europium signal. The measured signal is converted to a concentration using the analyzer-adjusted, lot-specific calibration curves stored in the memory of the analyzer [11,12]. A quantitative result is shown on the screen a few minutes after starting the analysis.

There are small differences between the tests, for example how much sample is dispensed, how much buffer solution is added, and how long each test is incubated, but the principle is the same in each case. Some tests require the sample to be diluted before incubation. Test Cartridges for these tests contain the necessary dilution cups.

Built-in hematocrit (Hct) determination

Built-in hematocrit determination

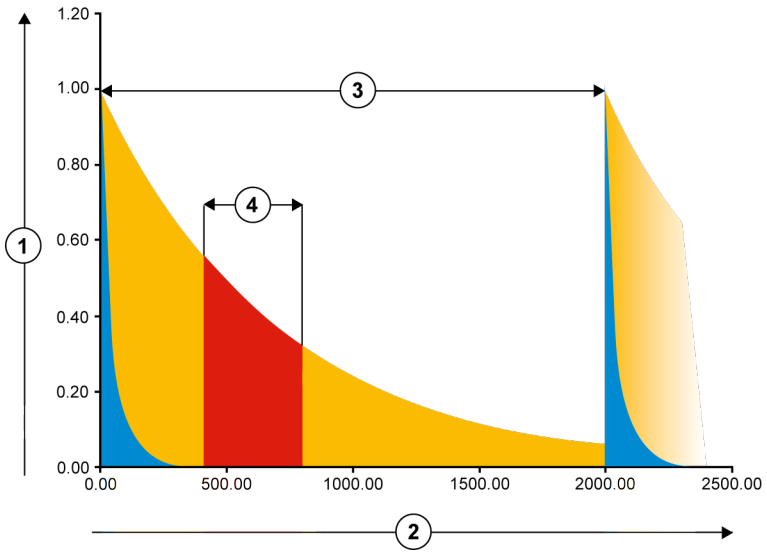
The analyzer has a built-in system to determine the hematocrit value of the sample aspirated at the start of a test. This value is necessary to calculate the accurate analyte concentration in plasma. If the hematocrit value is determined to be less than 15 %, the value is set to zero. If the value is determined to be greater than 62 %, no test results will be available and an error message attached to the result will explain why.

Determined hematocrit values will not appear on the analyzer screen, in printed results, or in exported patient results.

Method of detection (TRF)

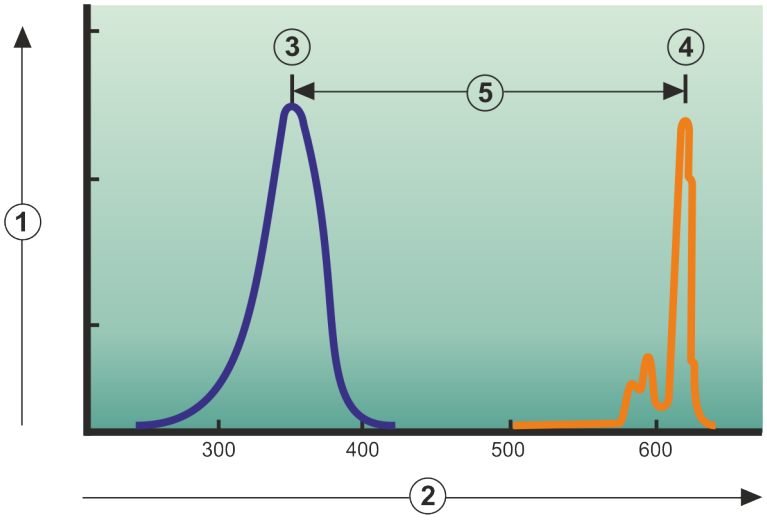
Time-resolved fluorometry

The detection methodology used in all AQT90 FLEX assays is based on time-resolved fluorometry (TRF). TRF has several unique features that make it a very suitable detection technology for assays requiring high sensitivity and wide dynamic range. For example in immunoassay techniques using conventional fluorescence detection, high non-specific background caused by light scattering, e.g. from the biological components of the sample, is a severe limitation to the sensitivity of the assay. However, in TRF used in AQT90 FLEX assays, this problem is avoided by using lanthanide chelate labels with unique fluorescence properties.



1	y-axis: Fluorescence	3	Cycle duration
2	x-axis: Time (µs)	4	Counting time

Lanthanides (such as europium) are rare earth metals with fluorescence lifetimes several orders of magnitude longer than the non-specific background fluorescence. The sample is pulsed from 1000 to 2500 times with excitation light of 340 nm. Between the repeated pulses, the sample fluorescence is measured after a delay time of 400 µs. At this measurement point, the non-specific background fluorescence has declined to a minimum. This gives an increased range in the low concentration area.



1	y-axis: Fluorescence	4	Emission
2	x-axis: Wavelength (nm)	5	Stokes shift
3	Excitation		

Other unique features of lanthanide chelate labels are the large Stokes shift, i.e. the difference between excitation and emission wavelengths, and the narrow emission peak. The wavelength of the emitted light is almost 300 nm longer than that of the

excitation light used and may be measured at its own characteristic wavelength. Both of these properties significantly increase the signal-to-noise ratio.

A special characteristic of AQT90 FLEX chemistry is also the way the TRF measurement is performed: TRF is measured directly from the dry surface of the well, and an additional enhancement or special label development step is not required.

Specifications 12

Product specifications

Specification	Value	
Height	450 mm (17.72 inches)	
Width	460 mm (18.11 inches)	
Depth	480 mm (18.9 inches)	
Weight	35 kg (77.2 pounds)	
Measurement methodology	Time-resolved fluorescence	
Incubator temperature	36.5 °C to 37.5 °C (97.7 °F to 99.5 °F)	
Noise levels	Values measured according to ISO-3746: • Weighted average value (during operation) <70 dBA • Peak impulse value (excluding alarms) <80 dBA	
Measurement cycle time	≤21 min	
Hematocrit range	0-62 %	
Throughput	Up to 30 samples per hour	
Data storage capacity	Patient profiles log	1000 patient profiles
	Patient results log	2500 patient records
	Activity log	7000 records
	Cal.adjustment log	5500 records
	LQC log	2000 records
	System-clean log	2000 records
	Event log	5000 records
External serial port	RS232, 9-pin subD connector. 5V is available at pin 9 for supply of external barcode reader	
USB ports	3 USB 2.0 (1 in front and 2 in the back of the analyzer)	
Ethernet	RJ45 connector, 10/100Mbit/sec	
Keyboard/mouse port	PS/2	
External VGA screen port	VGA connector	

Specification	Value
External communication protocols	High level protocols: • ASTM 1381-91, E1394-91 • ASTM6xx • HL7 ver. 2.2 • HL7 ver. 2.5
	Low level protocols: • Serial • Serial (Raw) • Network (TCP/IP) • Network (TCP/IP) (RAW) • Network (TCP/IP) (ASTM)
Display	• 8" TFT-LCD, resolution 800 x 600 VGA • Resistive touch screen
Built-in printer	Thermal printer (paper width 112 mm)
Built-in barcode readers (one under the screen and one in the power supply compartment)	• Laser class 1 • Auto scan by proximity sensor • Reading distance: 0-70 mm (0-2.75 inches)  Barcode specifications: • Resolution: ≥5 mil • Accepted codes: Code 128, Code 39, Code 93, Interleaved 2 of 5 Codabar

Specification	Value
Available items in the **Patient ID layout** screen	• Patient ID* • Accession number* • Patient last name* • Patient first name* • Sex • Date of birth • Patient note • Patient department • Sample site • Draw time • Physician • Operator • Department • Note • Measurement type • Age • Weight • Height • Approval status • Sample tube type • Approval time • Report layout • Sample age • Max. sample age • Patient account number • Test order code *These items are included in the Radiometer (-R-) default Patient ID layout.
Sample tube barcode reader	Analyzers with a serial number >393-838 R298:  • Laser class: 1M • Pulse duration: 1 ms • Optical power (illumination): 1.5 mW • Wavelength: 625 nm • Beam divergence: 46° Barcode specifications: • The barcode label should have at least 2 mm of white space before the first line and after the last line of the barcode • The resolution must be ≥7.5 mil • Accepted codes: Code 128, Code 39, Code 93, Interleaved 2 of 5, Codabar
Battery on the PC board	The battery on the PC board can be purchased from the manufacturer or their representatives (Lithium battery type CR2032, manufactured by "Matsushita Electric", "Panasonic", "MH12210").
Maximum power consumption	400 W (typical consumption 100 W)

Environmental specifications

Specification	Value
Location	Indoor use only
Altitude	0-2000 m (6562 feet)
Operating temperature	15-30 °C (59-86 °F)
Relative humidity	20-80 %
Mains supply	100/110/120/220/230/240 V ±10 %; 50/60 Hz ±5 %
Startup	3 hours
Ventilation	Unobstructed
Space requirement	Ample working space in front and space on the sides for cooling. The analyzer should not be kept within an enclosure. Mains should always be easily accessible to switch off the analyzer in emergency situations.
Storage temperature	-20 °C to 60 °C (-4 °F to 140 °F)
EMC - emission and immunity specifications	The device meets the requirements of emission and immunity regulated in GB/T18268.1, EN/IEC 61326-1 and GB/T 18268.26, EN/IEC 61326-2-6. This equipment has been designed and tested to GB 4824, CISPR 11 class A. In a domestic environment it may cause radio interference, in which case, you may need to take measures to mitigate the interference. The electromagnetic environment should be evaluated prior to operation of the device. Do not use this device in close proximity to sources of strong electromagnetic radiation (e.g. unshielded intentional RF source), as these can interfere with the proper operation.

⚠ **WARNING – *Risk of electric shock***
Make sure the analyzer is a minimum of 1.5 m from patient beds.

Detachable power supply cord

Country	Power-supply cord specifications
For Japan (125 VAC)	UL listed and KAM cord, min. type SV, min. 18 AWG, 3 conductors. Rated min. 60 C. Provided with a molded grounding-type (NEMA 5-15P) attachment plug rated 125 VAC, min. 2.5 A. Opposite end terminates in IEC 320 style connector rated 250 VAC, min. 10 A.
For Europe (250 VAC)	Cord type min. H05RR-F or min. H05VV-F or min. H05VVH2-F, rated min. 60 C, 2 × 0.75 mm^2. Provided with a molded grounding-type attachment plug rated min. 250 VAC, min. 2.5 A. Opposite end terminates in molded IEC 320 style connector rated min. 250 VAC, min. 2.5 A.

Tubes approved for use with the analyzer

About primary sample tubes

Primary sample tubes are evacuated tubes that can be used to collect blood samples from patients.

Approved primary sample tube requirements

Primary sample tubes approved for use with the AQT90 FLEX analyzer must fulfill the following requirements:

- Primary sample tubes must contain an appropriate anticoagulant for the test that is to be done:
  - EDTA
  - Lithium heparin
  - Citrate 3.2 %
- Primary sample tubes must not contain any gel
- Primary sample tubes must be made of plastic
- Primary sample tubes must be 80 mm in length with their caps on
- Primary sample tubes must be approved for use with the AQT90 FLEX analyzer

Tubes approved for use with the AQT90 FLEX analyzer			
Manufacturer	**Tube type***	**Tube diameter (mm)**	**Tube length without cap** (mm)**
Sarstedt	S-Monovette	13	65
		11	66
Becton Dickinson	Vacutainer (used with Conventional or Hemogard Safety Closures)	13	75
Terumo	Venosafe	13	75
Greiner	Bio-One International Vacuette (used with safety caps or pull caps)	13	75

* Not all tube types may be available in all countries.

** All the tubes in the table are 80 mm in length with their caps on.

Note: *AQT90 FLEX parameter-specific Test Kit* inserts provide details about the anticoagulants which can be used for each test.

Related information
About tube types, page 113

About secondary sample tubes

Secondary sample tubes are tubes that can be used to hold samples taken from primary sample tubes. For example, a sample of freshly isolated plasma or a sample of anticoagulated whole blood containing EDTA or lithium heparin.

Approved secondary sample tube requirements

Secondary sample tubes approved for use with the AQT90 FLEX analyzer must fulfill the following requirements:

- Secondary sample tubes must not contain any additives, clot activators or other substances
- Secondary sample tubes must be made of plastic
- Secondary sample tubes must be 80 mm in length with their caps on
- Secondary sample tubes must be approved for use with the AQT90 FLEX analyzer

Tubes approved for use with the AQT90 FLEX analyzer			
Manufacturer	**Tube type***	**Tube diameter (mm)**	**Tube length without cap** (mm)**
Sarstedt	S-Monovette	13	65
		11	66
Becton Dickinson	Vacutainer (used with Conventional or Hemogard Safety Closures)	13	75
Terumo	Venosafe	13	75
Greiner	Bio-One International Vacuette (used with safety caps or pull caps)	13	75

* Not all tube types may be available in all countries.

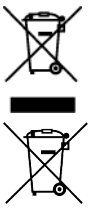
** All the tubes in the table are 80 mm in length with their caps on.

Graphical symbols 13

Explanation of graphical symbols/icons

These are the symbols you may find on the analyzer and the consumable products used with it.

Symbol	Explanation
	Keep dry
	Do not use if package is damaged
	For single use
	Expiry date Use by YYYY-MM-DD
	Contents
	Storage temperature range
	Lot no.
	Product code/Catalog no.
	Consult instructions for use
	On-board stability in days
	Manufacturer
	Date of manufacture
	Biohazard
	Keyboard

Symbol	Explanation
	COM gate (scanner/barcode reader)
	VGA (monitor)
	Mouse
	Network
	Off
	On
	UL certification
	USB
	Warning or caution
	This symbol indicates that Radiometer Medical ApS and its distributors within the European Union (EU) and associated states have taken the necessary steps to comply with the "DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 on waste of electrical and electronic equipment (WEEE)". Equipment marked with this symbol must not be disposed of as household waste but as electronic waste in accordance with local legislation. Please note that equipment contaminated with potentially infectious substances, such as body fluids, must be decontaminated before recycling. If this is not possible, the equipment must be disposed of as biohazardous material. Contact your local Radiometer representative for instructions.
	Marks compliance with SJ/T 11363-2006 (China RoHS). The number in the symbol shows the environmentally friendly use period in years.
	Marks compliance with SJ/T 11363-2006 (China RoHS). The product contains no restricted substances above the prescribed thresholds.

Legal information 14

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The procedures described in this manual must be observed in order to ensure proper system performance, and to avoid hazards.

Radiometer cannot provide or verify system performance characteristics if the system is not installed, used and maintained in accordance with Radiometer procedures or if accessories not meeting the specifications provided by Radiometer are used.

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If you have any questions or need assistance, please contact your local Radiometer representative.

Radiometer representative:

Code number: 995-235
Version: 201706F

CE IVD

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