Instruction Manual

EUROBlotOne

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EUROIMMUN

Medizinische Labordiagnostika AG
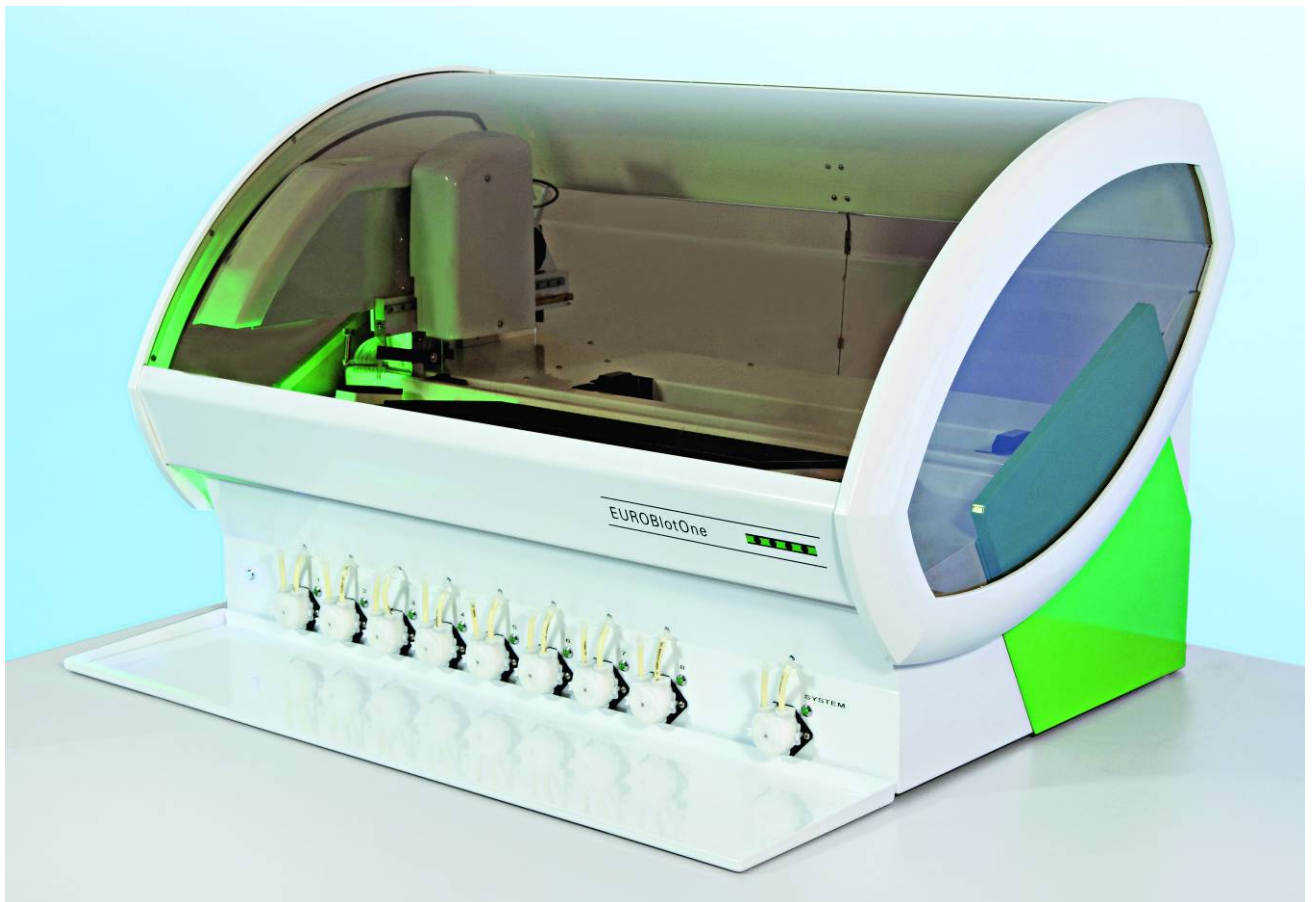
The knowledge contained in this manual is required for the operation of the instrument. Please, therefore, make yourself familiar with the contents and pay particular attention to the notes on the safe operation of the instrument. This manual is a component of the instrument and must be stored in the immediate vicinity of the instrument for access by the appropriate users.

The right is reserved to make changes resulting from technical developments; the manual is not covered by the update service.

1   Table of Contents

2 Hazard warnings, Safety Instructions and other notes

2.1 General Notes

This manual contains all important information for the user (e.g. laboratory personnel) with regard to the instrument EUROBlotOne (YG 0153-0101) and EUROBlotOne without camera (YG 0153-0101-1). It includes points of note on installation, operation and maintenance of the instrument and for the software belonging to it.

Before using the instrument, please ensure that you have familiarised yourself thoroughly with the contents of this manual. The operating manual must be kept near the instrument and the user must have access to it at all times.

2.2 Notes on warnings and safety

The symbols described here are used in this manual, on some system components and on the packaging. In addition, a specific notation is used for certain elements, e.g. buttons and keys.

- *POINTS OF NOTE*

Points of note are indicated by a symbol and are printed in a special typeface. The following symbols are used:

Consult Instruction Manual before use!

General notes are indicated by this symbol and provide useful information to the user.

Disconnect from mains before reaching into the machine!

- *HAZARD WARNINGS*

Hazard warnings are indicated by a danger symbol and printed in special typefaces. In particular situations, the following danger symbols are used.

Caution, risk of hazard! Consult instruction manual for use!

Biohazard!

Electrical hazard!

Hazard due to laser radiation!

Mechanical hazard!

- SYMBOLS

	Manufactured by
	Date of manufacturing
IVD	In Vitro Diagnostic Medical Device
REF	Order number
CE	CE-Label
	Fuse
SN	Serial number
	The instrument must not be disposed of in domestic refuse.
i	Please heed the Instruction Manual

2.3   Intended use

Product name: EUROBlotOne

The EUROBlotOne is a fully automatic instrument for the processing of immunoblot-tests performed on biological samples in accordance with the manufacturer's instructions described in this manual.

Only for in vitro diagnostics (IVD)!

Before using the EUROBlotOne, all test methods (assays) or test kits must be validated by the user in connection with the system. In this context, common clinical laboratory practice, the locally valid legal requirements and the current state of the art are to be heeded.

The device must only be operated by laboratory personnel who have been trained in the use of the system.

The instrument must only be used in accordance with its intended use.

Warning: The use of this instrument for purposes other than its intended use can lead to invalidity of the guarantee and warranty rights.

2.4   Operation

Read all of these instructions! Save these instructions for later reference!

The following safety instructions must be observed at all times, both before and during operation of the instrument!

The operating manual must be kept near the instrument and the user must have access to it at any time.

The EUROBlotOne was designed and manufactured in accordance with the safety requirements for IVD instruments. If national legal regulations stipulate rules for the installation and/or the operation of the instrument, the operator is obligated to heed these.

The manufacturer has taken all necessary measures to ensure that the instrument works safely with regard to its electrical and mechanical function. The systems are tested by the manufacturer and are delivered in a condition which allows safe and reliable operation.

In order to provide for operating safety, it is necessary to heed the information and notes contained in the manual.

2.5   Maintenance

Switch the instrument off and disconnect it from the mains supply before cleaning, disinfecting or decontaminating.

Liquid detergents, disinfectants or liquids for contamination may be neither poured nor sprayed into the system.

For cleaning and/or disinfection use a cloth moistened with detergent or disinfectant.

Only approved detergents or disinfectants may be used.

Only approved cleaning or disinfection methods may be used.

Applicable legal stipulations must be observed, during cleaning or disinfection.

2.6   Disposal

Potentially infectious material and all parts that may come in contact with potentially infectious material must be disposed of in accordance with the applicable, valid legal provisions.

All parts which have been replaced must be disposed of in accordance with the applicable, valid legal provisions.

Disposal of the instrument must be carried out in accordance with the applicable, valid legal provisions.

Disposal of the packaging material must be carried out in accordance with the applicable, valid legal provisions.

2.7   General notes on safety

Follow all warnings and instructions which are marked on the system and/or included in this manual.

The device must only be operated by trained personnel.

It is strongly recommended that all personnel using the system for the first time familiarise themselves with this manual prior to use.

The instrument must only be used in accordance with its intended use.

Only those consumables and accessory components should be used which are on the list of consumables supplied at delivery.

The manufacturer assumes no liability for damage caused by negligence or improper use or handling of the system.

The operator may only perform the maintenance work described in this manual.

During work on the instrument, only specified components may be used.

The tests and maintenance work specified by the manufacturer should be performed to guarantee safety for the operator and correct function of the system.

Any service and maintenance work not described in this manual must be performed only by trained, qualified and authorised service technicians.

Any work performed on the instrument which is not authorised by the manufacturer shall render all guarantee rights null and void.

The system was developed and tested according to the regulations of the IVD directive.

Any authorised changes made to the system shall result in the manufacturer's declaration of conformity becoming null and void, with respect to the applicable legal regulations, In this case, the customer is responsible for the fulfilment of the applicable regulations.

The instrument may be opened, serviced and repaired by trained, qualified and authorised service personnel only.

- *ELECTRICAL SAFETY*

To ensure safe electrical function of the installed system, the valid, relevant legal provisions must be observed.

Ensure that the correct operating voltage is available before you connect the system to the mains supply.

The EUROBlotOne must be operated using only the type of power source specified on the type label. If you are not sure whether the available power source is suitable, consult an authorised salesperson or your local electricity supplier.

Use a 3-pole connector to connect the instrument and all peripheral appliances to the mains.

Use only extension cables with a protective earth conductor and earthed connection.

It must be ensured that the system and its peripheral devices are earthed to the same protective earth potential.

Never knowingly interrupt the contacts.

There is a risk of electrical shock if the protective conductor is interrupted inside or outside the device, or if it is disconnected.

The system must be connected to the power supply using the mains-connection cable provided.

Do not allow anything to rest on the power cord.

If safe operation is no longer guaranteed, switch the system off and disconnect it from the mains supply.

If liquid gets inside the system, switch it off and disconnect it from the mains supply. Clean and dry the respective parts.

Surfaces (floors, work surfaces) must be dry when you are working with the system.

Use only flasks, tubing and components which are recommended for containing liquids for the instrument.

Spare fuses must conform to the manufacturer's specifications (nominal voltage, nominal current, and type).

Always replace blown fuses; don't try to repair them.

Never short-circuit the fuse holder.

Switch the instrument off and disconnect it from the mains supply before servicing.

Apply power only when directed to do so. If the instrument is connected, use extreme caution whilst servicing the system with the cover open.

Never remove protective guards or safety components.

Electrical-connection contacts (plugs, sockets etc.) may be electrically live.

Even after the device has been switched off, electrical components (e. g. capacitors) can still be live and may discharge.

All conductive parts can cause electric shocks and pose, for this reason, potential hazards.

When setting up the instrument, position it in a way that makes it easy to disconnect it from the power supply!

- *PHOTOBIOLOGICAL SAFETY*

Do not look directly into the beam of the barcode scanner or the camera. The instrument uses LEDs of class 1M.

Long eye-contact with the LED-beam can cause eye irritation.

- *MECHANICAL SAFETY*

Never place the instrument on an unstable table, cart, or the like.

The device may fall, causing serious damage to the system or even injury to the user.

Never open screw-attached housing parts while the system is switched on.

In the moving parts (pipetting unit, barcode scanners, rocking table) there is always a potential risk of injury.

Only connect the instrument to the power supply when you are expressly instructed to do so. If the instrument is connected to the mains, use extreme caution whilst servicing the system with the cover open.

Do not open the protective cover during a run and do not reach into the working area.

Improper handling can cause serious damage to the instrument as well as injury to the user.

When opening or closing the covering, please ensure that the pipetting unit is at a standstill before reaching into the working area.

If possible do not touch the pipetting unit or other moving parts during operation.

Ventilation slits should not be blocked or covered.

- *BIOLOGICAL SAFETY*

Risk of infection! Handling of samples and reagents:

Avoid contact with skin/mucous membrane and with samples/test reagents as well as with parts of the instrument which come into contact with samples/test reagents.

The above-mentioned parts should be treated as potentially infectious.

Direct contact with reagents can lead to irritation of the skin and the mucous membranes.

Use appropriate gloves!

To ensure correct use of the reagents, observe the instructions contained in the package inserts.

If sample material is spilled in the system, the instrument is to be cleaned and disinfected immediately.

No guarantee can be provided for reagent containers or tubing (system solution and waste) with regard to their tolerance of organic solvents.

For this reason, organic solvents are only to be used if they have been explicitly authorised.

The liquid and waste bottles cannot be autoclaved!

2.8 Equipment safety and EMV

The EUROBlotOne was designed, produced and tested in accordance with DIN EN 61010-1 (IEC 61010-1) *"Safety requirements for electrical equipment for measurement, control, and laboratory use".* The system has left the factory in perfect condition with regard to technical safety.

The EUROBlotOne meets the requirements of the European Union directive 98/79/EC "In vitro diagnostics directive".

Conformity with the above EC directive is documented by the CE symbol.

The reinforced security devices (interlocks), which control the closing of the lid and provide for safe operation of the instrument, are not to be blocked or deactivated.

2.9 Positions of safety labels and type label

If any label is lost, replace it with an equivalent label!

The symbol for biological hazard is to be seen on the waste bottle.

2.10 Directive 2002/96/EC for Waste Electrical and Electronic Equipment

Notes for disposal

This instrument contains circuit boards and conductors which contain lead. The instrument is therefore to be disposed of in accordance with the 2002/96/EC Waste Electrical and Electronic Equipment Directive or according to locally applicable and valid legal regulations.

To dispose of the instrument, please contact your local product specialist. Please ensure that potentially contaminated instruments (e.g. equipment from safety areas) must be decontaminated by the operator prior to disposal. It may be necessary to provide the disposal plant / the product specialist with an appropriate certificate of decontamination.

2.11 Warranty

The EUROBlotOne, including its original accessories, may only be used for the analytic techniques described in this manual. Please take heed of the following notes for the EUROBlotOne:

- The manufacturer guarantees defect-free material and production at the point of delivery.
- The warranty period is 12 months as of the date of installation.
- Defects must be reported immediately and everything must be done to minimise damage.
- If such a defect is reported, EUROIMMUN AG is obligated to remedy it, either by repairing the instrument or by supplying a device which is free of any defect, according to EUROIMMUN AG's choice.
- No warranty is provided for defects caused by normal wear and tear (wearing parts in particular) or by improper handling.

EUROIMMUN AG is not liable for damage occurring through the following:
- Failure to comply with this instruction manual
- Operational errors or negligence
- Improper use
- Use of unqualified personnel
- Use of non-approved spare parts
- Reconstruction or intervention on the part of the user him/herself
- Impermissible deactivation of the safety devices

3 Instrument Description

EUROBlotOne is a compact laboratory system for the automatic processing of immunoblot test strips. The instrument performs all working steps independently, from pipetting of samples to photographing (only YG 0153-0101) of the blot assays. Only the sample tubes with the patient samples and the immunoblot test strips must be fed by the operator.

It is able to process up to 44 test strips in one run. A maximum of 44 sample tubes can be placed into a rack. The instrument is fitted with a bar-code scanner to identify the sample tubes. The patient samples are precisely pipetted using a pipetting needle. The volume of the sample is checked by a liquid-level detection system device. The dispensing of the reagents is carried out by eight peristaltic pumps. These are situated at the front of the instrument for optimum access. The pumps can also work backwards. This is important for the functions "Antidrop" (to save drops during the dispensing process) and "Reagents saving" (dead volume is transported back in to the reagent tube after dispensing). After this, the reagents are aspirated from the incubation channels, directly into a waste bottle, using a vacuum. The waste bottle can hold 4 litres of liquid waste and is fitted with a liquid-level sensor. During the incubation, the reagents are mixed by rocking the incubation tray. Three speeds can be selected for this (slow, medium and fast). The instrument is controlled by PC (USB connection) and corresponding software. The EUROBlotOne software makes simple and easy operation as well as maintenance and testing possible. Several (compatible) tests can be carried out simultaneously on the instrument. For the subsequent automatic evaluation by the EUROLineScan-Software, the

incubated test strips are photographed consecutively by a monochrome CCD-camera (only YG 0153-0101) and the image files are saved. A green LED is used for the photographing process.

Description of the connection elements on the back of the instrument.

Combination-connection with power switch and fuse holder
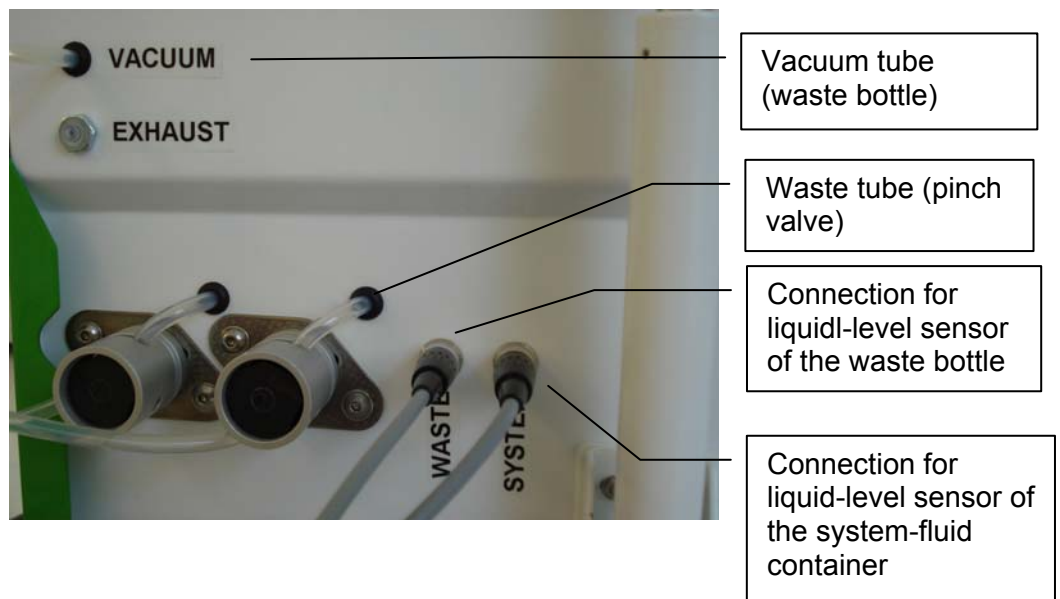

USB-device-connection

USB-camera-connection

Vacuum tube (waste bottle)

Waste tube (pinch valve)

Connection for liquidl-level sensor of the waste bottle

Connection for liquid-level sensor of the system-fluid container

4   Technical data

Instrument controls	PC with Software application EUROBlotOne
Operating system	Windows 8 Professional, 64 Bit
Communication with PC	USB 2

Test-strip processing system

Incubation trays	Plastic, disposable
Number of channels	Max. 44
Rocker	3 possible speeds
Waste bottle	4 l, with liquid-level detection

Reagents area

Number of reagent pumps	8
Dispensing volume	0.1 – 5 ml per 0.1 ml
Dispensing accuracy	Less than 10 %
Reagent bottles	Individual, according to needs

Patient samples

System-solution container	1 l, optical liquid-level detection
Number of positions in the patient-sample rack	44 – sample tubes 4 – control tubes
Pipetting volume for samples	15 – 200 µl Smallest pipetting volume 1 µl
Precision	Less than 2 %
Minimum volume for liquid-level detection	100 µl – sample tube 50 µl – control tube

Photographing

Operating principle	CCD-camera, 5 MPixel, monochrome
Resolution	490 dpi
Wavelength of the lens filter and dominant wavelength of the LEDs in flash	525 nm
PC-connection	USB 2

Elec. performance data	100 – 230 V AC 2.1 A max 50/60 Hz
Fuse	2 x T2.5 A 250 V
Power consumption	85 VA
Average power consumption (during the test processing)	35 VA

Dimensions	810 mm (W) x 530 mm (D) x 495 mm (H)
Weight	40 kg
IP degree of protection	IP 20

Operating temperature:	+5 °C - + 40 °C WARNING: If the system has been exposed to temperatures beyond this range, it must not be used again until it has reached the prescribed temperature range. Premature operation can only cause damage to the system.
Storage temperature:	1 °C– 50 °C
Maximum altitude for operation:	up to 2000 m above sea-level
Max. relative humidity:	80%, non-condensing humidity

4.1   Type label

The type label is located on the back of the instrument beside the power connection.

4.2 Scope of Delivery

1. EUROBlotOne YG 0153-0101 / without camera ….……..YG 0153-0101-1
2. PC incl. mouse / keyboard
3. Flatbed scanner ……………….……….……….……YG 0102-0101
4. Printer ....….……YG 0921-0101
5. UPS…………….………….……….……….…..YG 0941-0101
6. Primary power cable 2x......………………………..…ZG 015o-0101-012
7. USB-Cables 2x
8. Hand scanner ………………………………..….....YG 0273-0101
9. Retainer for system solution
10. System solution container 1 l…....…....……….………ZG 015o-0101-025
11. 8x input tubes with connection…......…….…....…..ZG 015o-0101-031
12. Priming bowl
13. Waste bottle (4l) …………….……….…....………ZG 015o-0101-026
14. Reagents tray
15. Reagent bottle (1x 500 ml, 2x 250 ml, 5x 100 ml)
16. Calibration bowl for pumps...…………….…..……..ZG 015o-0101-021
17. Camera template………….………….…………….…ZG 0153-0101
18. Incubation tray 3x ………….……….………………...ZD 9898-0144
19. Setup Clean…………….………….……………………ZG 0009-0505
20. Operating Manual, Quickstart and maintenance/instructions for care

5 Transport, construction and installation

5.1 Unpacking, transport and storage

Please observe the following safety notes when unpacking, transporting and storing the EUROBlotOne:

- Check the packaging for transport damage before opening.
- Whilst unpacking, check that all system components are present as stated on the delivery note.
- Ensure that transport and storage temperatures remain conform with the "Technical data".
- Place the instrument on a stable work surface. Due to its weight (40kg), the instrument is preferably to be lifted out of its transport box by two people.
- Compare the serial number on the rear panel of the instrument with the serial number on the delivery note.
- Visually inspect the instrument for loose or broken parts.
- Retain the packaging for use when storing for long periods or to return the instrument to the manufacturer.

When unpacking, use scope of delivery described in Chapter 4.2 to ensure that all components are present.

If any of the components are damaged, please directly contact EUROIMMUN AG or its local representative.

The instrument can be purchased from EUROIMMUN AG under the order number:

YG 0153-0101 or YG 0153-0101-1 (without camera)

Any further questions on the instrument or accessories are to be directed to our customer service. Alternatively you can contact your responsible sales contact.

5.2 Operating environment

The system is intended for use in enclosed areas only. When choosing the assembly location, ensure that the system is protected from dust, vibrations, strong magnetic fields, direct sunlight, draughts, humidity or high temperature changes.

5.3 Installation and commissioning

Commissioning and installation of the EUROBlotOne is to be carried out by a service engineer or an authorised representative/employee of EUROIMMUN AG.

Position the instrument in such a way in the workplace that the main switch is easily accessible. Leave as much space around the system as possible, to allow for installation and further handling of the waste bottle and the system-solution container (rear-right) and for the reagent tray at the front. Enough space is also required to be able to open the instrument cover which opens upwards to the rear. We recommend placing the PC in the immediate vicinity of the instrument, preferably to the right.

Fix the reagent tray to the front of the instrument below the peristaltic pumps. Place the priming bowl under the dispensing arm at the left hand side of the work area.

Place the waste bottle at the right-rear side of the instrument. Connect the waste and vacuum tubes carefully to the container connections. When doing so, ensure that the waste tube is connected to the connection W and the vacuum tube is connected to the connection V. Connect the connector of the liquid-level sensor to the waste-container connection at the back of the instrument. Place the system-solution container and holder in front of the waste bottle. Fit the container with the stopper and aspiration tube and connect the tube to the system-solution pump at the front-right side of the instrument. Connect the liquid-level sensor connection to the system-solution connection at the back of the instrument. Ensure that the tube is fitted tightly!

Insert the mains connector (left) into the mains supply socket.

There is an emergency draining outlet located at the bottom of the device in the vicinity of the incubation tub. In case of a severe system failure, fluid can leak from this outlet onto the work surface.

WARNING! Only connect the instrument to a suitable power supply (see section: "Technical data") The use of incompatible connections can lead to electric shocks or danger of fire.

Set the PC up and connect it to the instrument with the two USB-cables (in accordance with the lettering)

6 Operating Instructions

Before starting up the EUROBlotOne, please ensure that you have familiarised yourself thoroughly with the contents of this manual. Supplementary information can be obtained from our service department or from authorised representatives.

The EUROBlotOne is a precision device which may be subject to impaired performance or damaged if handled improperly.

The device must only be operated by personnel who have been trained in the use of the system.

To ensure safety both in the working procedure and in the function of the system, the notes and warnings included in the Instruction Manual must be observed.

Switch the instrument on with the main switch at the rear-left. The instrument is switched on when the small control lamp at the front of the instrument glows blue.

Start the PC and the EUROBlotOne-Software (see Chapter 7.3)

7　The EUROBlotOne-Software

7.1　Operation

In this chapter the construction and operation of the software and its individual functions are described in detail.

o　Switch the EUROBlotOne on.

o　Start the software by clicking on the symbol on the desktop or click in the start-menu.

o　The greeting logo of the software is shown.

o　You will see the opening window when the EUROBlotOne software is ready.
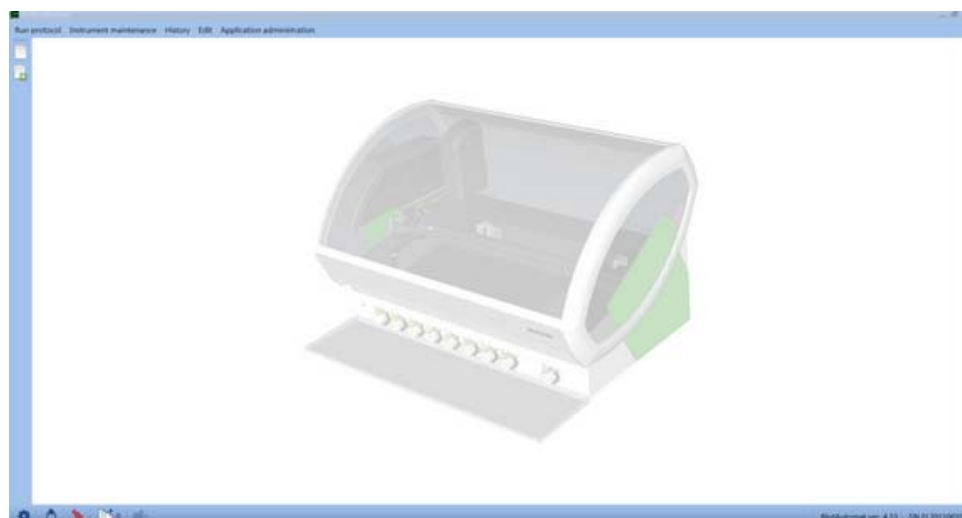
The opening window is divided into a workspace with three areas (above, below and at the side).

The bar at the top edge of the screen contains the main menu with all important functions for the management of the EUROBlotOne (e.g. preparation of the instrument for operation, for test analysis and for maintenance). With appropriate settings, you can use the software without corresponding registration. Furthermore, the instrument history can be viewed there and the settings changed.

Some functions are only available for users with particular rights (service technicians and system administrators). These users can undertake modifications to all settings of internal processes of the instrument (parameters, tests, reagents). The user levels are allocated at the time of installation of the system.

The status bar is situated at the lower edge of the screen. It contains information on the status of the instrument. At the side there is a symbol bar which allows for quick access to the basic functions of the instrument.

The system now checks the system connection. If the instrument is switched on, the right hand side of the status bar displays the ID of the connected device (e.g. SN EL20110035) and the Firmware-Version (BlotAutomat ver. 4.X).

After this, an automatic self-test follows, in order to determine the functionality of the individual instrument components.

The result of the self-test will be shown in the start window. You can read the results of all self-tests which have been carried out in the instrument history.

If the self-test was successful, the instrument is ready for operation.

The EUROBlotOne-main menu is divided into the following areas (symbols)**:**

Run protocol
    New
    Imported

Instrument maintenance
    System solution
    Pumps priming
    Pump autocalibration
    Weekly maintenance
    Monthly maintenance
    Run self-test

History
    Self-tests register
    Maintenance history
    List of communication with external system (EUROLineScan)
    Protocol archive

Edit (Administrator, Service)
Assay group list
Tests register
Reagents register
Tubes register

Application administration
Login
Password change
List of users (Administrator, Service)
Logout
Settings (Administrator)
BCR settings (Administrator, Service)
Segments import (Administrator, Service)
Old data deleting (Administrator, Service)
About application

7.2   Start worklist ("Run protocol")

Here, the analysis of the samples can be started.

The samples must be prepared for the analysis. After this, they are entered into the protocol, which is always carried out in a single complete task-run. A sample can be examined in a protocol for various parameters. But all parameters must be allocated to a test in the same test-group in order to be able to carry them out in a worklist. All tests within a test group have the same incubation steps. However, they can differ with regard to type and volume of the reagents to be dispensed (particularly in investigations of different antibody classes, such as IgG, IgM etc.)
The exposure time for photographing each test-strip is individually set for each parameter. This ensures appropriate quality of the images, in order to be able to evaluate them later using software.

The tube type can be defined in the worklist whilst preparing a protocol.

Note: choosing the correct tube is the prerequisite for correct liquid-level detection and pipetting.

You can choose between two types of protocol:

o   New (creation of a protocol of your own)
o   Imported
- Imported protocol from EUROLineScan
- Imported protocol from EUROLineScan, only for photographing

7.2.1 "New" (creation of a protocol of your own)

You can create a new protocol to enter the samples to be analysed and to choose the parameters which are to be investigated. The process of creating a protocol consists of several steps:

Step 1 - Filling out the worklist:
When creating a new worklist, samples are prepared and the parameters to be investigated are set.

1. Filling out the worklist

Protocol name – To be filled out by the user; optional. The name makes it easier for the user to find the protocol. If a name is demanded by the system, the field will be filled out in advance in accordance with the necessary structure (application administration/settings). The name chosen by the user can be edited later.

Written by – Either the system fills this field out in advance with the full name of the registered user or the user does this him/her self. This field is optional and can be edited.

2. Entering the samples into the worklist:

Entry of the samples can be carried out in two different ways:

A) Tube with barcode:

Reading in with the scanner:
In each newly generated worklist, the field "**Last tube position for BCR scanning**" is filled out in advance with 44. This is the maximum number of samples that can be analysed. If fewer samples are to be analysed, the fields can be edited in two different ways:

1. By clicking in the field "**Last tube position for BCR scanning**" the current value can be edited.
2. By choosing the last sample position in the sample-rack template which is to

be scanned (cf. Fig 1) and then clicking the arrow key, [<<] the field "**Last tube position for BCR scanning**" is moved forward.
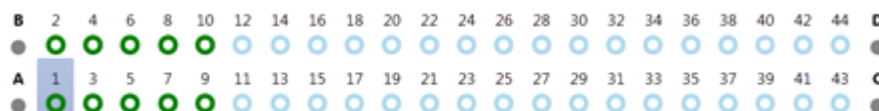

Fig. 1: sample-rack template

If the button "**Use BCR for sample ID**" (cf. Fig. 2) is clicked, the system requests the user to load the sample rack into the instrument.
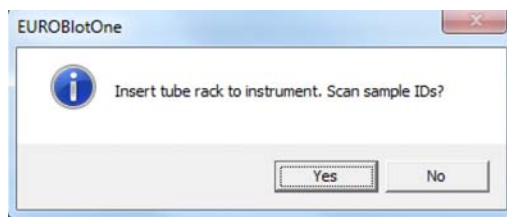

Fig. 2: loading dialogue

After ensuring that the samples are in the correct tube type, which is also selected in the application (see Edit/Tubes register), place the tubes in the rack and place the rack into the instrument. Click "**Yes**" if you wish to have the sample barcodes scanned in.

The barcodes on the tubes will be read consecutively. Positions A, B, C and D, however, will not be scanned. In the field "**Sample ID**" the successfully scanned positions are seen to be marked green.

B) In case of tubes without barcodes or of which the barcode is not to be scanned (in this case, the option "**Use BCR**" in den "**Settings**" was previously deselected):

Loading a worklist template:
Click on "**Open WL template**". In the next window, choose a file in TXT format from your computer (each row in a document contains the ID of the sample) and click "**OK**". The values from the file will now be automatically carried over into the field "**Sample ID**" and marked green.

After ensuring that the samples are in the correct tube, which is also selected in the application (see Edit/Tubes register), place the tubes in the rack and place the sample rack into the instrument.

ℹ **The order and sample IDs in the sample rack must match the entries in the software exactly!**

Manual entry:
After ensuring that the samples are in the correct tube type, which is also selected in the application (see Edit/Tubes register), place the tubes on the sample rack. Enter the sample barcodes into the field "**Sample ID**" in the worklist in accordance with the current arrangement in the sample rack. Place the sample rack into the instrument.

ℹ **The order and sample IDs in the sample rack must match the entries in the software exactly!**

3. Allocation of tube types:

A tube type is preselected for each sample (for positions 1 to 44 sample tubes; for positions A, B, C and D control tubes). You may also choose another tube type. To do this, click on the arrow button in the field "**Tube type**" in order to display the possible tube types. Please be aware that the chosen tube type must match the tube used in the instrument, otherwise the samples cannot be correctly pipetted (see Edit/Tubes register).

4. Entering the samples into the worklist:

After entering or scanning in the samples, you can now allocate the parameters which are to be examined to the samples for the worklist (cf. Fig 3).
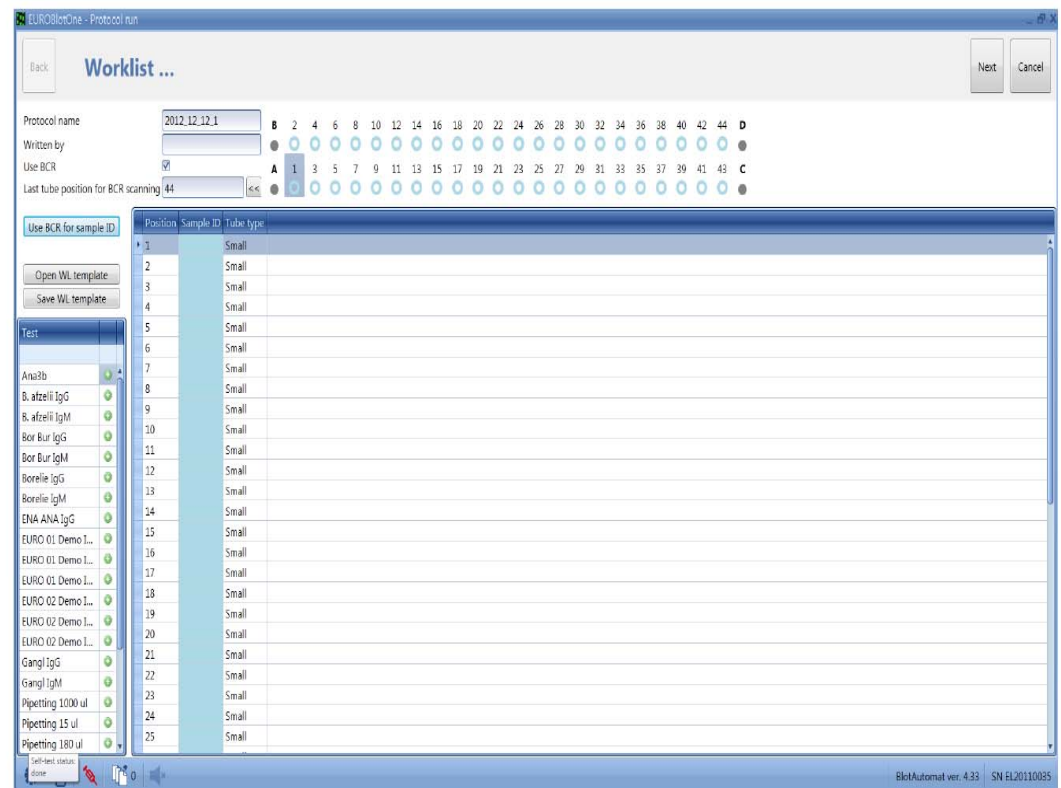

Fig. 3: worklist

To do this, the desired parameters for each sample are selected and entered into the worklist.

To insert a parameter, click on the plus symbol in the parameter list (see Edit/Tests register).

For each sample, mark the parameter which is to be processed. Please ensure that the list only contains those parameters which are allocated to the same test group.

To allocate a parameter to several samples at the same time, press and hold the left mouse button and drag the cursor across several samples.

The first parameter to be allocated to a sample determines the test group for all further parameters.

Creation of a work-list template
When creating a worklist, combinations of parameters can be stored as a template. To create a template, click on "**Save WL template**". The desired template (a combination of parameters) will then be saved in the list of templates. A template can be removed from the list again using the eraser symbol.

Calling up a worklist template
In order to call a parameter combination up from the templates, click on the button "**Open WL template**".

After the samples have been allocated to the parameters, the protocol can be executed. To do this, click on "**Next**". The system checks whether the number of parameters exceeds the number of wells in the incubation tray and whether at least one sample is allocated to each parameter. Any parameter which has not been allocated must first be removed from the worklist before the system will continue.

By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

Step 2 – Executing a worklist

The wells of the incubation tray are displayed running from left to right on the individual rows of the protocol. Each well is allocated to a sample-ID, a parameter as well as perhaps to a lot number for the test strip being used.

Check whether the fields "**Protocol name**", "**Written by**", "**Sample ID**" and "**Test**" are filled out. The fields "**Protocol name**" and "**Written by**" can be edited.

Fig. 4: worklist

Lot input – You can allocate the parameters used in the worklist to a lot number by clicking in the field "**Lot**" or, at a later time, by entering the lot into the worklist using the copy function (see Step 7 – Test run).

Click on "**Next**" to continue processing the protocol. By pressing "**Back**" you can view the previous page of the process (Step 2 - Processing a worklist). By pressing "**Cancel**" the creation of the protocol will be <u>irrevocably cancelled</u>.

Step 3 − Preparation of the system solution

 If no system solution has been loaded (status "**Not ready**" – red symbol in the status bar, cf. Fig. 1) and the protocol contains parameters which necessitate the pipetting of samples, then system solution must first be made available. Place the system-solution container in the holder and click on the pump symbol.

 After the pumping process, the status of the system solution changes to "**Primed**" and the appropriate symbol turns blue.
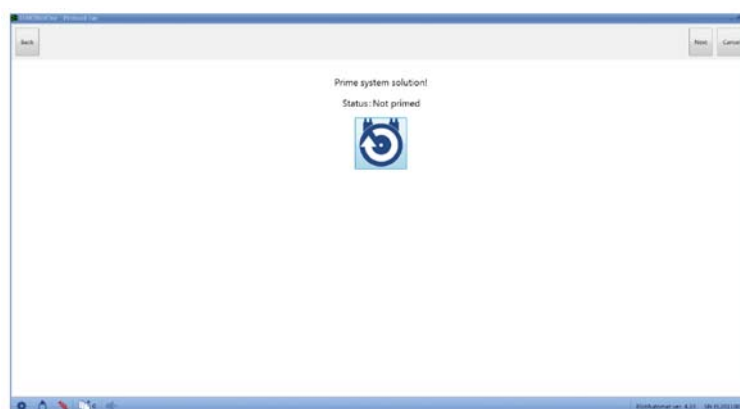

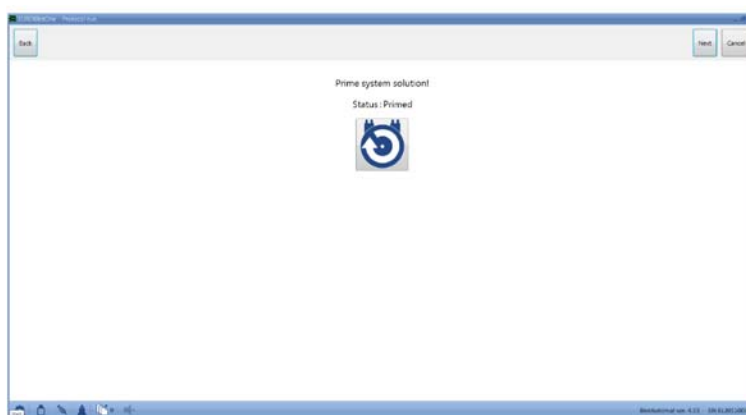*Fig. 5: start system-solution loading process*

Fig. 6: system-solution loading process finished

Click on "**Next**" to continue processing the protocol. By pressing "**Back**" you can view the previous page of the process (Step 2 – Processing a worklist). By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

Step 4 – Insert the incubation tray and select the start position

Insert the incubation tray into the instrument. Click in the field of the test-strip with which you wish to start, to set the start position for the processing (e.g. if a tray is inserted which is only being half used). A well can only be selected as a start position if the number of wells which follow it is sufficient to satisfy the set parameters.
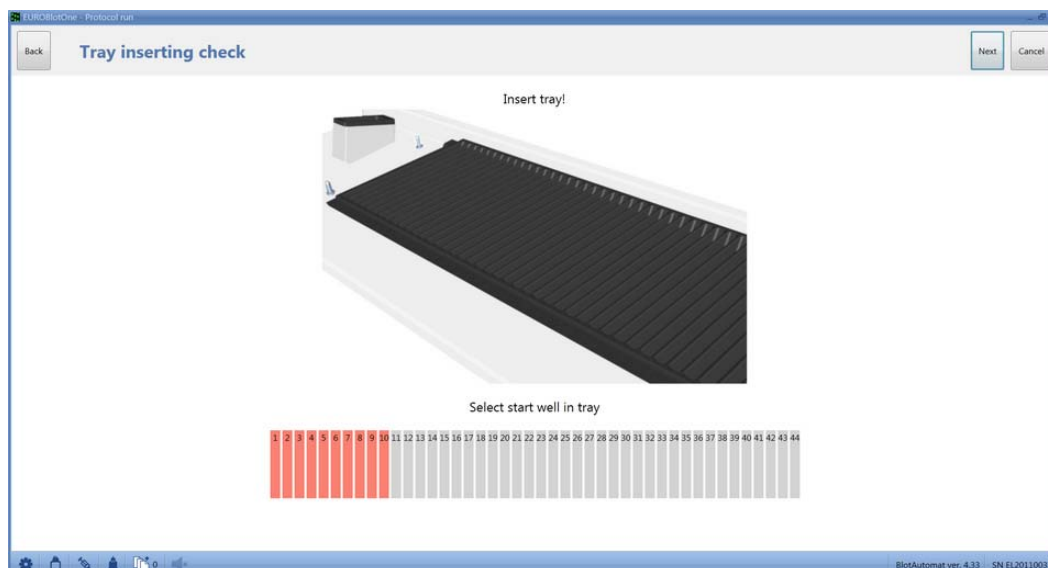

Fig. 7: request to insert the incubation tub

Click on "**Next**" to continue processing the protocol. By pressing "**Back**" you can view the previous page of the process (Step 3 – Preparation of the system solution). By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

Step 5 − Checking the waste bottle

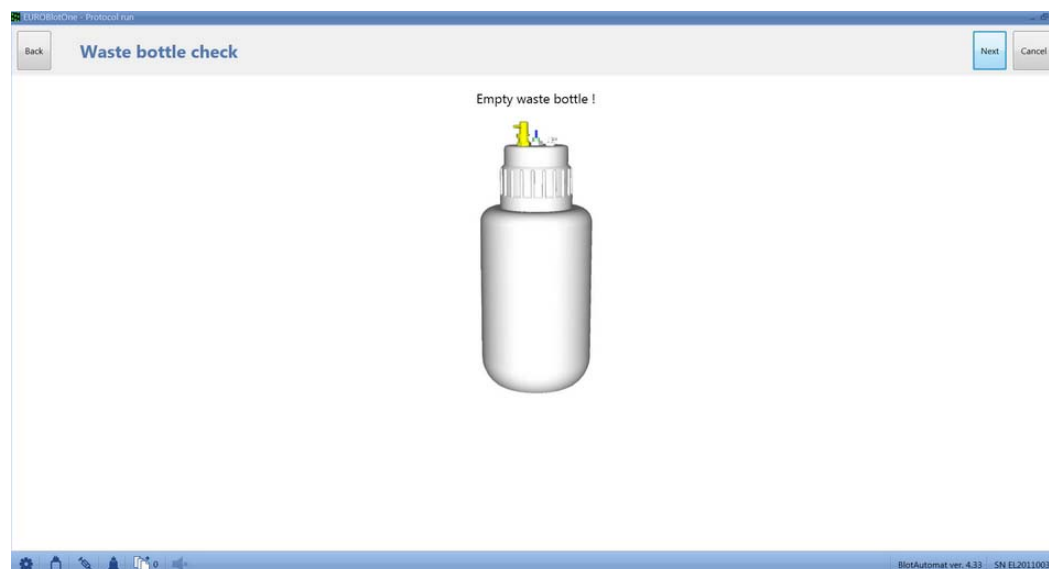Empty the waste bottle before beginning.

Fig. 8: request to empty the waste bottle

ℹ️ **During the processing of the samples or any other work process (e.g. maintenance) the waste bottle fills up. This is brought to attention by means of an audio signal and a colour change on the appropriate symbol in the status bar.**

Symbol	Description
🍼	The waste bottle has sufficient available capacity
🍼	The waste bottle contains fluid. It is recommended to empty the container.
🍼	The waste bottle is full and cannot hold any more fluid. The instrument goes on hold until the container has been emptied.

Table 1: Overview of the fill-level status of the waste bottle

After you have connected an empty waste bottle, click on "**Next**" to proceed with the preparation and the loading of the reagents according to protocol.

If no reagents are required for the chosen parameters, the software will skip this step. If you wish to begin with processing, confirm the system query with "**Yes**". You will be taken directly to "Step 7 – Test run"

By pressing "**Back**" you can view the previous page of the process. (Step 4) By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

Step 6 − Allocation and loading of the reagents

In the following steps the required reagents will be loaded.

Please always load 5 ml more of the required reagent for the purpose of flushing into the respective bottle.

At the beginning, the system automatically allocates the reagents according to the preferred and recommended combination (see Edit/Reagents register).

Allocate reagents manually to a pump – If you would like to change the system allocation, click in the pump field, hold the left mouse button and drag the reagent to other pump. The reagent at the target pump will then automatically be allocated to the pump now made available. A red bar displaying the previous pump number will now appear in the pump field.

Load reagents – The system loads the reagent into the intended tube.

Once the reagent is in the correct tube and without air bubbles, confirm the loading process.

Load reagent later – Reagents which become unstable after a certain period of time can be put on hold for later.
The system will remind you to load the reagent 5 minutes before it is required (see step 7 – Test run).
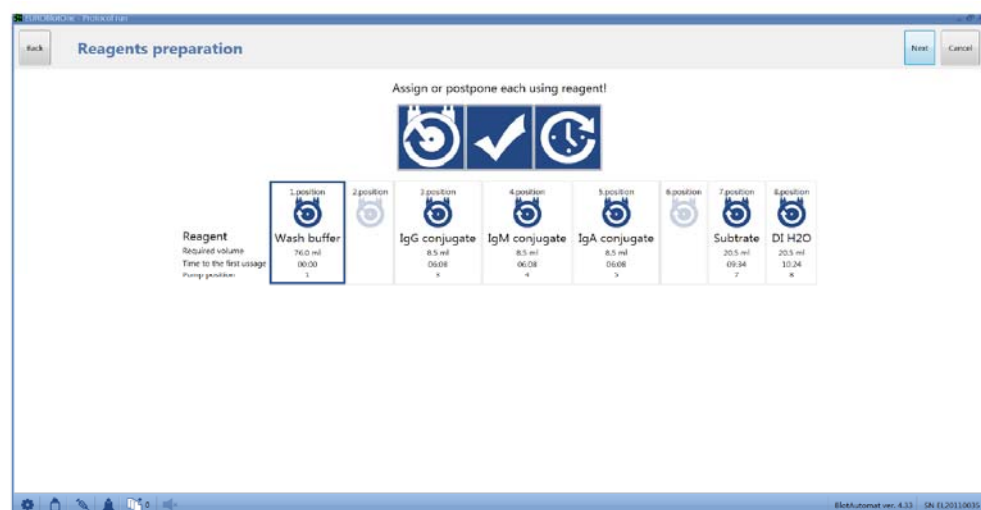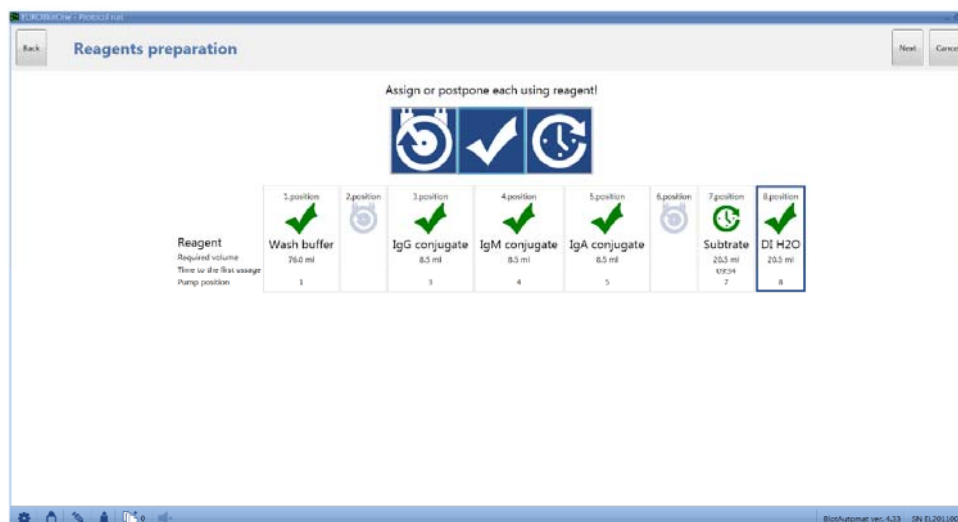

Fig. 9: before loading the reagents

Fig. 10: after loading the reagents

After you have loaded all necessary reagents or, if necessary, put them on hold, click "**Next**" to continue with the processing of the protocol. If you wish to begin with processing, confirm the system query with "**Yes**". The instrument begins the run; i.e. the planned test steps will be performed consecutively.

If you do not wish to continue, click on "**No**". The window for preparing the reagents will remain active and you can make further changes to the reagents and to the allocated pumps.

By pressing "**Back**" you can view the previous page of the process. By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

Step 7 – **Test run**

After the run has started, a time axis will be displayed with basic data regarding the progress of the worklist (cf. as of 11):

• **Expected finish** – Estimated time left before the end of the worklist.
• **to manual operation** – Time left before a manual work step begins.
• **Time in pause** – Total length of time in which the instrument is in pause. Total time of all pauses initiated by the user, times for manual pipetting (e.g. if the sample has not been found in the sample tube) and time taken for individual manual steps.
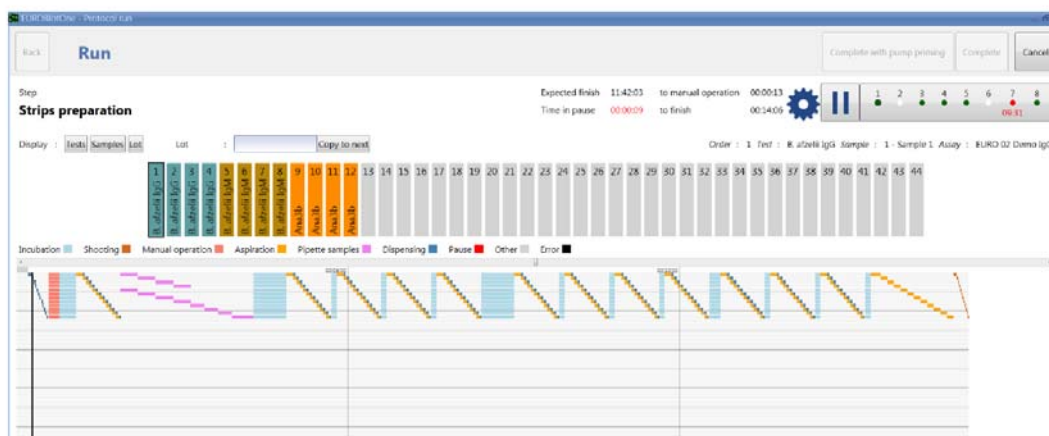• **to finish** – Estimated time until the completion of the worklist.

Fig. 11: time axis

Each work step of the test is displayed in a particular colour.

Fig. 12: status display of the time axis

If the mouse cursor is rolled over the field of the analysed sample, the following information will be displayed in the time axis:

- Well (position of the sample in the tub)
- Sample
- Assay
- Step
- Action
- Time

The incubation tray is displayed graphically in the middle of the window. Incubation wells in which the same parameters are being analysed have the same colour. Using the buttons "**Tests**", "**Samples**" or "**Lot**", you can view the information corresponding to an incubation well.

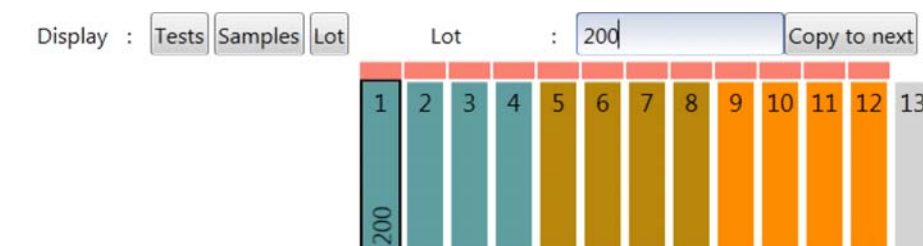If the lot was not entered during the preparation of the protocol, it can be inserted afterwards, by clicking on Lot .

Fig. 13 entering the lot information postoperatively

Then, using the mouse, select the position for which you wish to allocate the lot number. Now you can enter the desired lot number into the entry field above the image. You can also allocate the lot number to subsequent positions by clicking on "**Copy to next**".
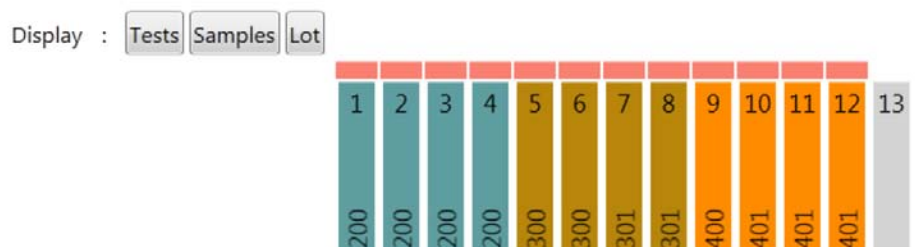

Fig. 14: transferring the lot information to subsequent tests

The value is automatically adopted for the next position with the same parameters (same colour). It is not absolutely necessary to enter the lot.

In the top-right corner of the window, beside the display of the pumps in use, the following symbols and buttons can be seen:

 - The instrument processes a worklist (user information)

 - Pause instrument

 - Continue worklist

 - Cancel run

Loading of reagents on hold

 If not all reagents were loaded at the time of creating the protocol, the pump symbol in the status bar will turn yellow five minutes before the reagent is required. Click on this symbol or on the pump display:

Fig. 15: display and selection possibilities of the pumps to be loaded

A window opens for loading reagents which are on hold (cf. Fig. 16) Click on the appropriate reagent which is to be loaded. If you neglect to load the reagent at the time it is needed, the run will be paused and a window displayed for automatic loading (see Step 6). The run will not be continued until you have loaded all required reagents. The time period of the interruption will be added to the display "**Time in pause**"
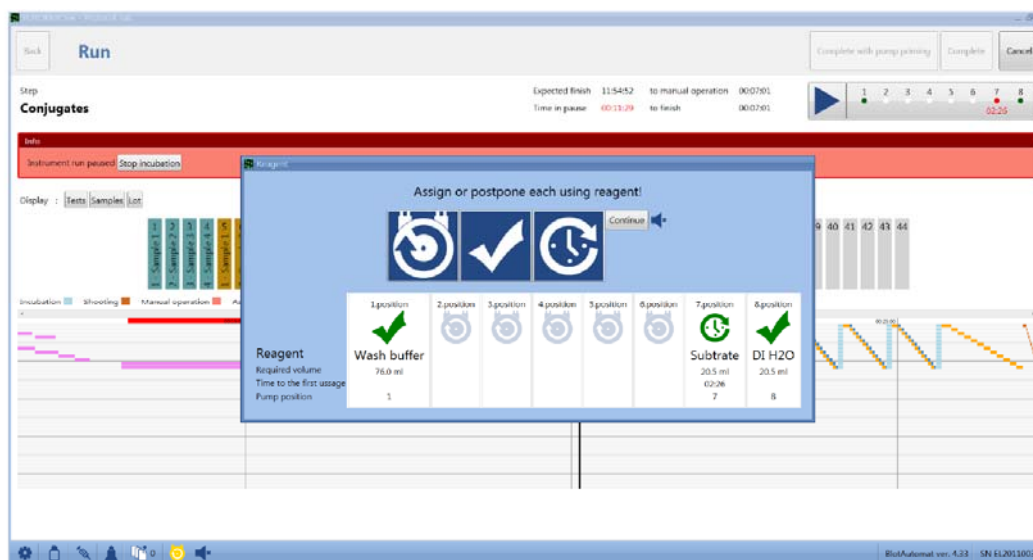

Fig. 16: activating the pumps

Error in the run – During a run, errors can occur. The system informs of errors by means of a short acoustic signal. Additionally, an error message is displayed on the screen (cf. Fig. 17a). This message contains the error number and a short description. The acoustic signal can be switched off using the loud speaker symbol.

Fig. 17a: error message with a suggested solution

Depending on the error message, the system will suggest measures to clear the fault (cf. Fig. 17a). If the self-test is successful, the run can be continued (cf. Fig. 17b).

Fig. 17b: continuation of the operation after clearance of the error

Manual steps – Follow the instructions of the system. These were entered previously during the creation of the test (see Edit/Test-strip group list).
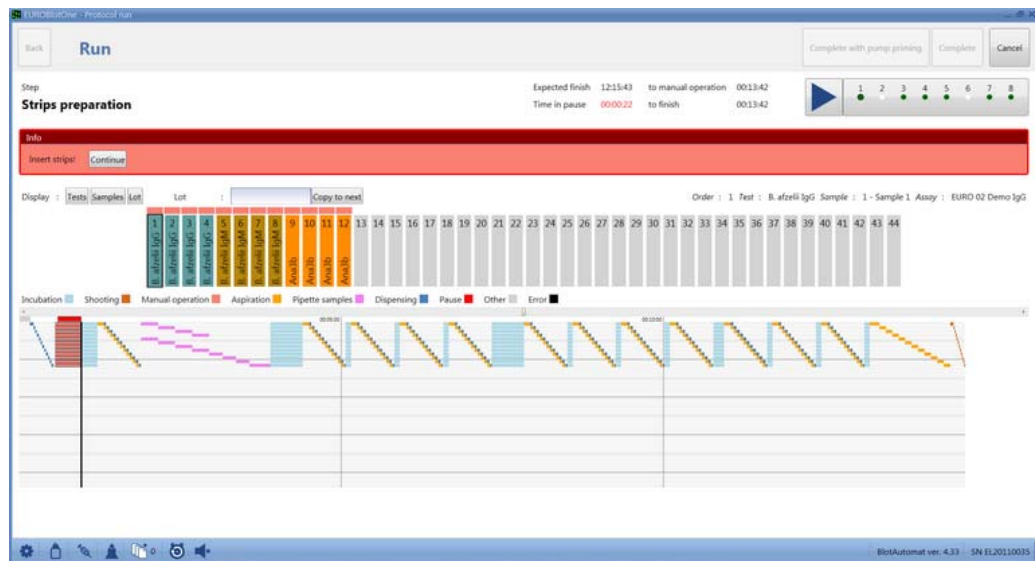

Fig. 18: request to insert the test strips.

Manual pipetting – During the pipetting process, the sample in the tube may not be recognised. In this case you will be requested to pipette this sample manually at the end of the automatic pipetting process. Pipette the required sample volume as instructed in the image (red field above the relevant sample, cf. Fig. 19). The time period of the manual pipetting will be added to the display "**Time in pause**"

Fig. 19: display of the volume to be pipetted above the sample (30 µl)

After pipetting all samples, click on "Continue", in order to continue processing the worklist.
If the run is successful, a corresponding message with a green background will be shown in the window. If there was an error in the run, the red info box will light up red (cf. Fig. 20).
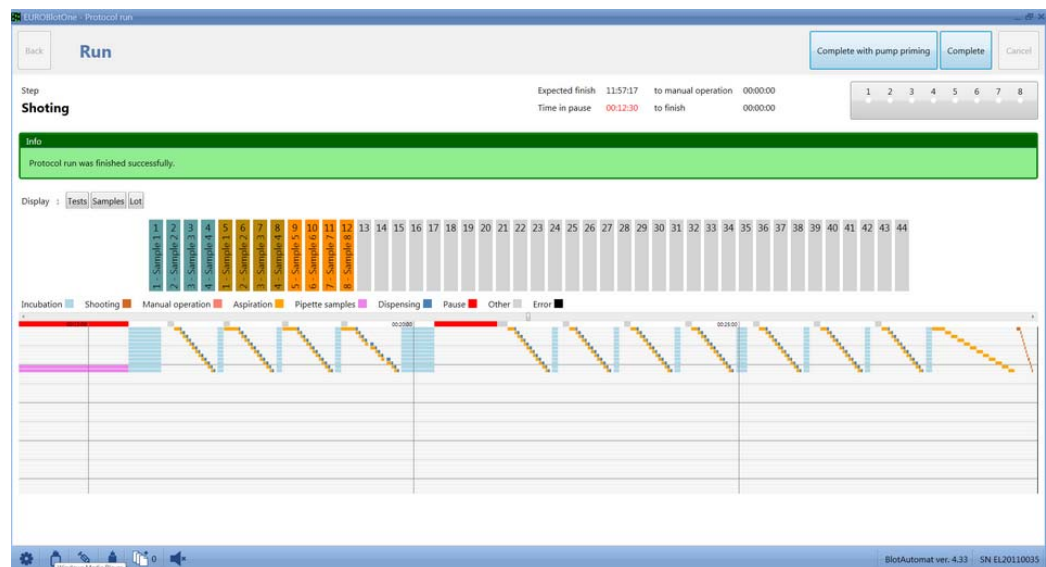

Fig. 20: display for a successfully executed protocol

If the run is finished (all test steps have been carried out successfully or interrupted by errors or manual interventions), the pumps can be rinsed.

Step 8 – Rinsing the pumps

If you do not want to rinse the pumps after completing the run, click on "**Complete**" and the system will end the protocol.

If you wish to remove the reagents used from the tubes, choose "**Complete with pump priming**". Upon doing this, the pump symbol and the required rinsing volume will be displayed. Place all tubes that are to be rinsed into a container with distilled water and click on the pump symbol. You can change the rinsing volume (recommended: 10 ml) and the pumps chosen by the system. Should you, however, decide not to carry on with rinsing, click on "**Complete**". Confirm the following safety query and the protocol will be completed without rinsing. The protocol will also be ended without rinsing if you press "**Cancel**".

Start the rinsing process for the marked pumps with the button. After rinsing you can finish the protocol with "**Complete**".

Fig. 21: rinsing the pumps

The completed protocol (with or without rinsing) will be taken into the protocol list (History/Protocol archive). The protocol status will be set to "**Processed**" or "**Not processed – error**", depending on whether or not the run was successful.

At the end of the day, if the instrument is no longer needed after the last run, the following measures should be carried out:

Drain the tube system (after cleaning with distilled water).
 Remove the reagents tubes from the containers.
 Rinse the pumps with 10 ml of air by means of "**Instrument maintenance**" – "**Pumps priming**".

Remove the system solution from the tube system.
Remove the lid of the system-solution container.
Rinse the system solution out of the instrument by applying the menu point "**Instrument maintenance**" - "**System solution**".

 Close the application with .
 Switch the application off at the main switch.

Interrupting the run − You can interrupt the run at any time by pressing "**Cancel**". The system will then cancel the run irrevocably. The time period of the cancellation will then be noted in the protocol with the status "**Not processed – error**".
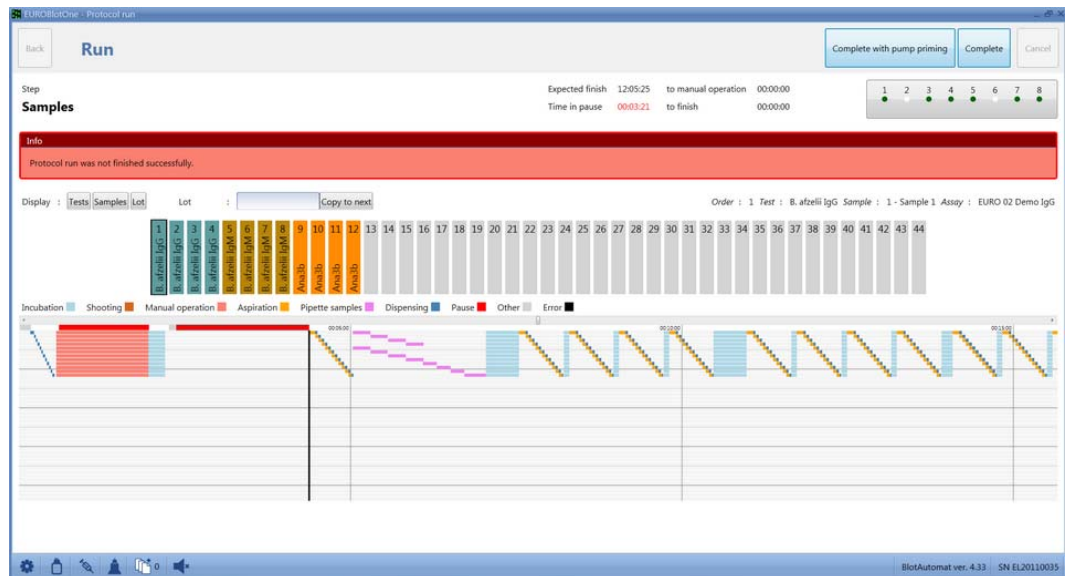

Fig. 22: cancellation message

7.2.2 Imported protocol from EUROLineScan ("Imported")

The EUROBlotOne-software can import analysis protocols from EUROLineScan. After this, the results of the processed protocols are transferred back to the EUROLineScan for evaluation by the software (see History/List of communication with external system).

If a new protocol arrives, the user will be informed of this in the status bar.

 The corresponding symbol for imported protocols (= protocols received from EUROLineScan) also shows the number of protocols to be processed. The processing of an imported protocol occurs either by automatic analysis of samples (see Chapter 7.4.2) or by photographing the test strips (see Chapter 7.4.3).

You can see a list of all the imported protocols from the EUROLineScan-programme under "**Run protocol**"-"**Imported**" and/or by clicking the button.
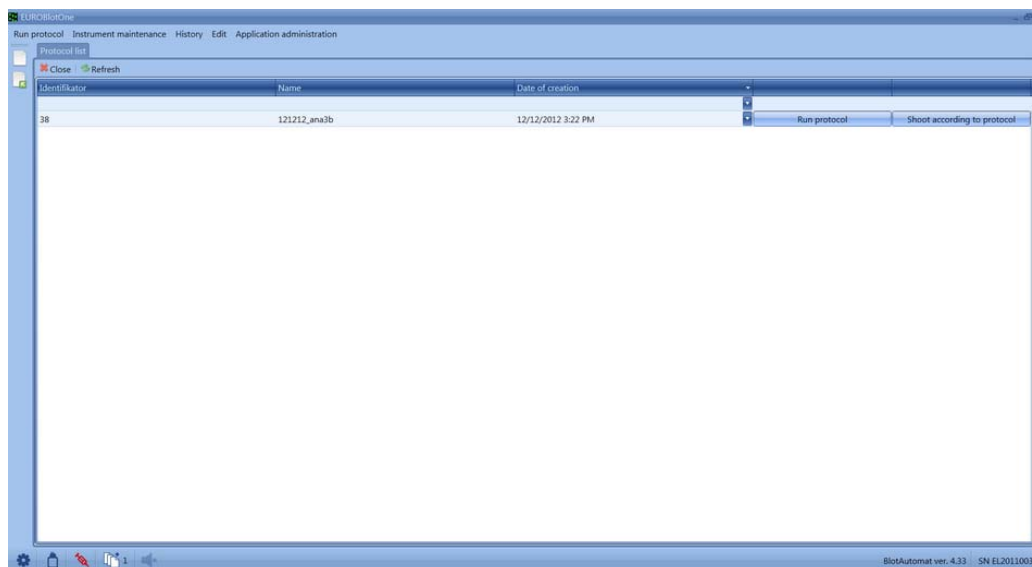
Fig. 23: protocol list

Select the imported protocol that you wish to process and click on "**Run protocol**".

Execution of an imported protocol by analysing the samples:

Step 1 – Display protocol

You receive the following information about the protocol:
Protocol name – The name of the protocol defined in EUROLineScan
Written by – Name of the Creator in EUROLineScan
For each sample:
Strip order – Number indicating the position in the incubation tub
Sample ID – Unique designation of the sample
Test – Chosen parameters
Lot – Unique designation of the test strip lot

Fig. 24: detail view of the protocol

If the instrument is using a barcode scanner and the protocol is to be executed, click on the button "**Next**" (cf. Fig. 24). The system will then request you to place the sample rack in the instrument and to proceed with the scanning of the samples.
After ensuring that the samples are in the correct tube type, and this is also selected in the software (see Edit/Tubes register), place the tubes in the rack beginning with position 1 (without leaving any positions vacant). After this, place the sample rack into the instrument. Confirm the system query with "**Yes**" if you want to scan the sample barcodes.

If you do not wish to scan the sample barcodes, press "**No**". Only the protocol information is shown. By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

If the system is not using a barcode scanner and if the protocol is to be continued, click on the button "**Next**" (see Step 2).

Step 2 − Display worklist

If the protocol is being processed on an instrument with barcode scanner, the sample barcodes (sample IDs) will be displayed in the worklist. These will be allocated to the corresponding positions in the worklist and marked green.

If the sample ID has not been successfully scanned, due to no barcode being available or in the case that it is damaged, the corresponding position will be displayed red. The scanned IDs will then be compared with those of the protocol. If there is no match, the positions will be marked with orange (cf. Fig 25).

Fields marked with orange can be edited to correct the sample barcodes.

If the processing of the imported protocol is to be continued, choose "**Next**". The system checks whether the sample IDs in the worklist correspond with those of the protocol. In case of discrepancies, the system will request you to remove these. The protocol cannot be further processed until this is done. If the IDs match, the system moves on to the next step.

A tube type is automatically chosen for each position in the worklist (sample tube for position 1-44, control tube for position A, B, C and D). However, a different tube type can also be chosen from the list of available tube types (see Edit/Tubes register).
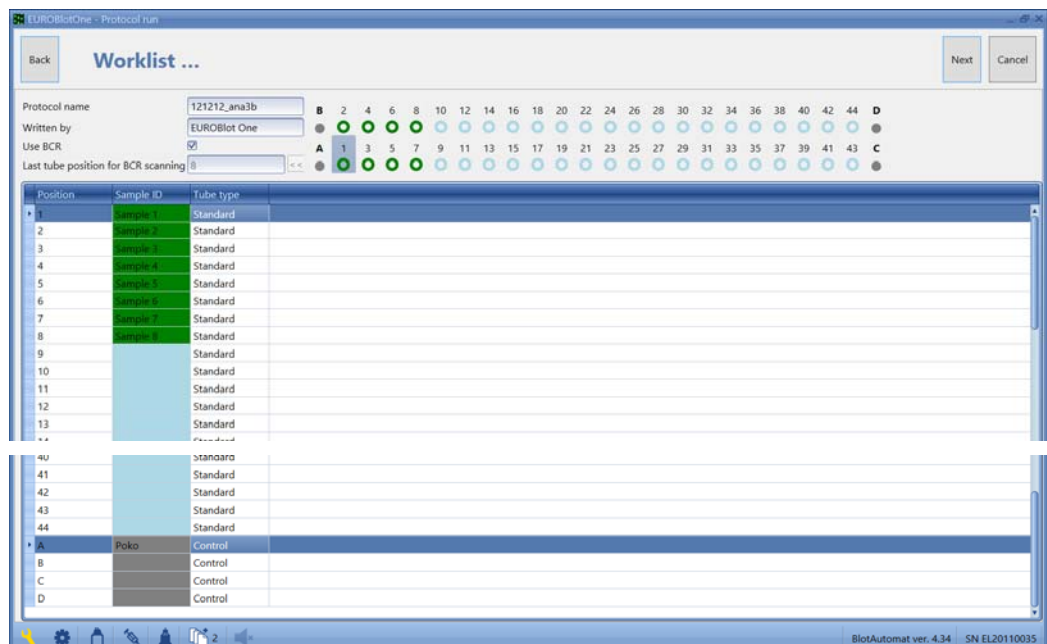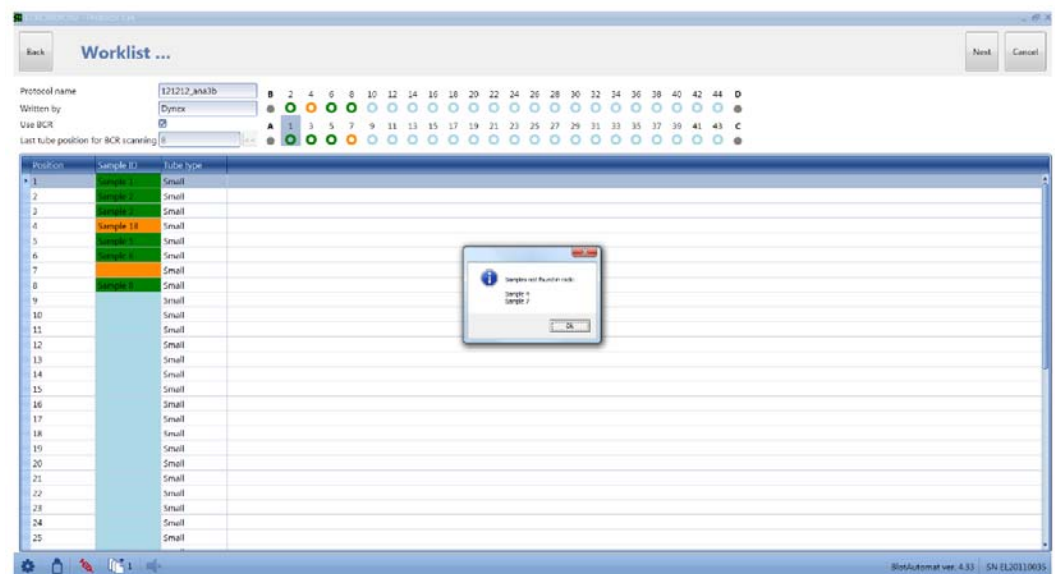
Fig. 25: overview of worklist

Fig. 26: overview of all samples that were not automatically recognised in the created worklist.

If the protocol is being processed on an instrument without barcode scanner, the sample IDs of the imported protocol will be taken into the worklist. Position the sample tubes in the sample rack in accordance with the instructions in the worklist. If this is not possible, cancel the protocol import process with **"Cancel"** since the sample IDs cannot be processed.

If the processing of the imported protocol is to be continued, choose **"Next"**.

By pressing "**Cancel**" the creation of the protocol will be irrevocably cancelled.

As of Step 3, follow the process described in the Chapter "Creation of your own protocol" (Chapter 4.7.1).

7.2.3 Imported protocol from EUROLineScan – photograph ("Imported")

An imported protocol can also be used for photographing the test strips. To do this, select the protocol and click on "**Shoot according to protocol**". (cf. Fig. 27, only possible with YG 0153-0101).
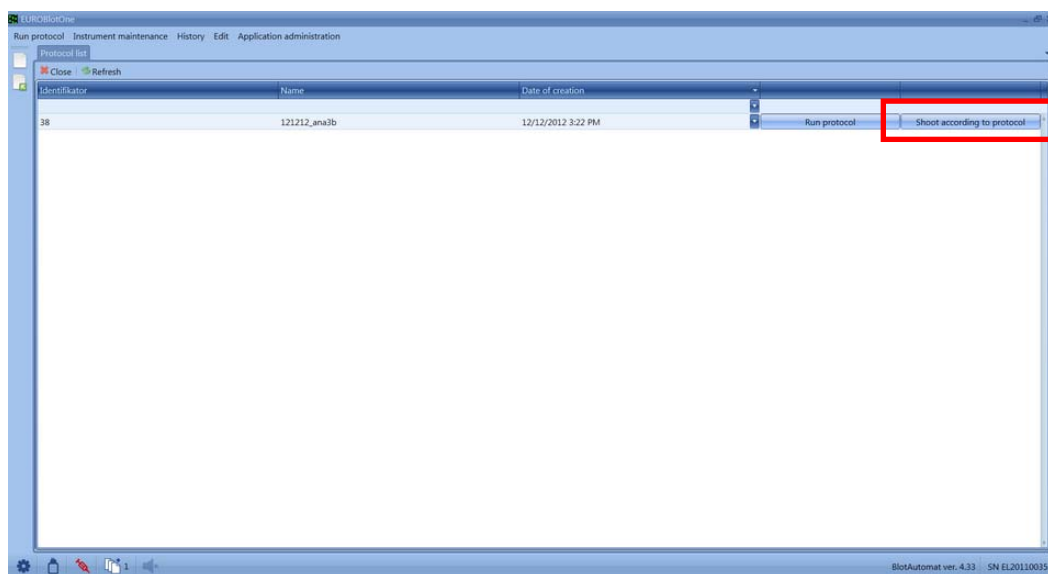
Fig. 27: execution of a protocol for photographing with EUROBlotOne

Execution of an imported protocol for photographing the test strips:

Step 1 – **Display protocol**

The following information, which cannot be edited, is available for a protocol

Protocol name – The name of the protocol defined in EUROLineScan
Written by – The name of the Creator in EUROLineScan

For each sample:
Strip order – Number indicating the position in the incubation tub
Sample ID – Unique designation of the sample
Test – Chosen parameters
Lot – Unique designation of the test strip lot

Fig. 28: a view of the imported protocol

If the test strips of the imported protocol are to be photographed, choose "**Next**" (see Step 2).

With "**Cancel**" you can cancel the protocol.

Step 2 – Insert the incubation tray and select the start position

The system will now request you to insert the incubation tray. After this, choose the start strip with which the system should begin.
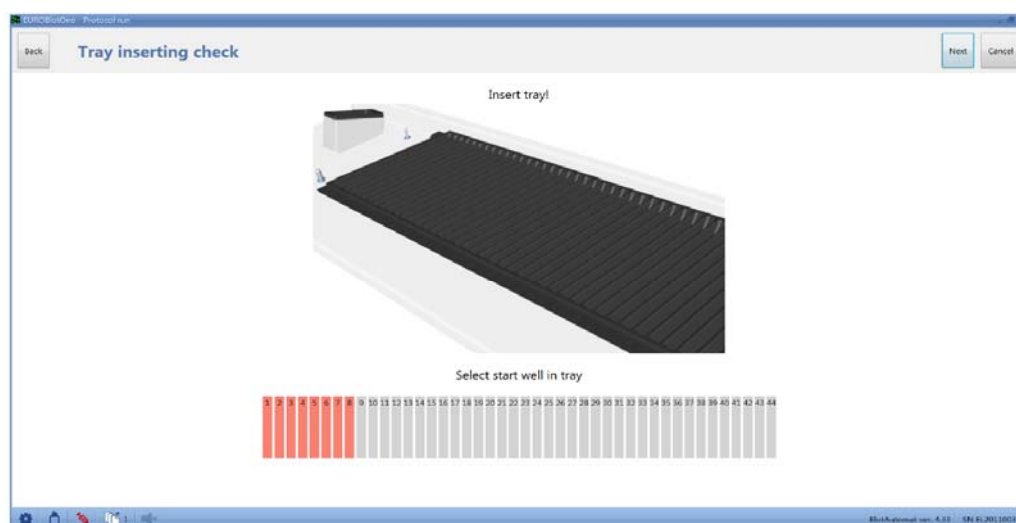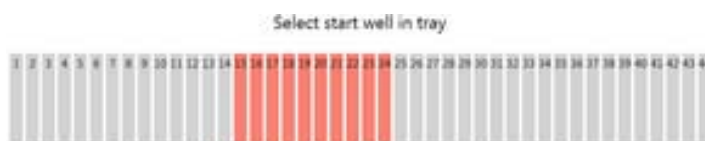

Fig. 29: tray inserting check

To do this, click in the field of the corresponding test strip. The photographing process is started.

A well can only be selected as a start position if the number of wells which follow it is sufficient to satisfy the set parameters.

If the test strips of the imported protocol are to be photographed, choose "**Next**" (see Step 3).

By pressing "**Cancel**" the protocol will be irrevocably cancelled.

Step 3 – Photographing test strips

The system starts photographing the test strips at the position chosen by the user. In doing so, the software displays which strip is currently being photographed (cf. Abb. 30).
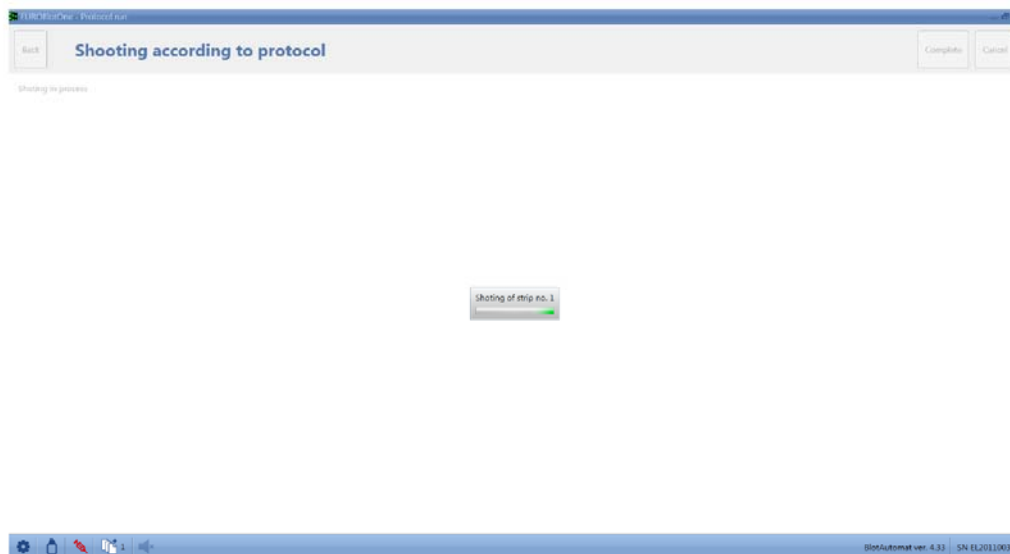
Fig. 30: status display for the photographing process

After completion of the photographing, the result is shown. If the photographing process is successful, the images will be saved on the hard disk. They can be viewed via the details of the processed protocol (see History/Protocol archive, cf. Fig. 31).
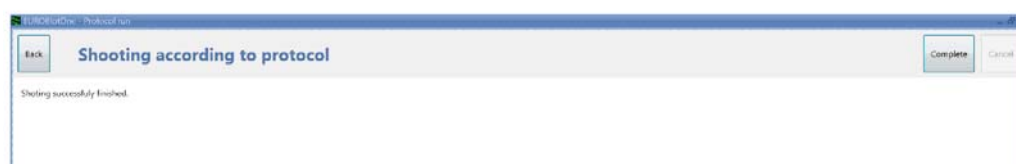
Fig. 31: completion of the photographing process

If photographing is not possible (e.g. due to a camera defect), an error message will be shown. With "**Continue**" the protocol will be processed but not completed (cf. Fig. 32).

Fig. 32: camera error message

Fig. 33: status message for the photographing process

7.3   Maintenance (instrument maintenance)

In order to guarantee the operational safety of the instrument, maintenance checks must be made regularly. Maintenance must be carried out weekly and monthly (see Care and maintenance for the EUROBlotOne (YG_0153_A_DE_YXX)). The monthly maintenance check replaces the corresponding weekly check since the maintenance measures carried out on the tube system are the same. The tubes should be clean at all times in order to provide for perfect pump performance and to avoid contamination.

Clean the instrument with a moist lint-free paper towel or cloth. In case of heavy soiling, mild cleaning fluids can be used additionally.

Clean the aspiration tube, the rinsing bowl and the area around it with 70% alcohol. Follow the same procedure for the lower end of the pipetting needle and the edging of the rinsing unit.

If the mirror of the barcode scanner is soiled, take out the sample rack, turn off the instrument and move the arm to the right in order to access the mirror. Clean the mirror with a soft cloth; moisten the cloth if necessary. To finish off, you can do a final clean with 70% alcohol.

Depending on the degree of utilisation of the instrument, we recommend a maintenance check every six months which is to be carried out by the service technician (service measure).

If tubes are damaged or contaminated, they must also be replaced.

The peristaltic pumps have a replaceable plastic head with a drive module and reagents tubes. If the degree of utilisation of the instruments is normal, we recommend replacement of the pump heads once every six months (service measure).

Recalibration is necessary after replacing the pump heads.

After using the instrument, empty the waste bottle. The container should always be clean. If necessary clean the float of the liquid-level sensor. Ensure that the float can move easily and freely on the guide rod. The lid of the container should be well closed during operation.

This symbol in the status bar indicates that maintenance is due. After the maintenance process, the symbol in the status bar disappears. You can also perform maintenance on the instruments if the symbol is not displayed. Each maintenance process is saved in the history (see History/Maintenance history).

The following maintenance measures can be carried out by the user:
- Clean the pumps and preparing the system solution
- Calibrate the reagent pumps. If an auto calibration is not possible or the value obtained is not correct, contact technical service.
- Execute a self-test in order to ensure that the instrument is functioning correctly.

The maintenance menu contains the following options:
- System solution (preparing the system solution)
- Priming the pumps (rinsing of the pumps)
- Auto-calibration of the pumps (pump calibration)
- Weekly maintenance
- Monthly maintenance
- Run self-test

7.3.1 Preparing the system solution (system solution)

The system solution is required for pipetting the samples. Before the start of the run, the system tube should be filled with system solution.

After the application begins, the standard status of this system solution is "**Not primed**". This is also shown by the red symbol in the status bar.

Connect the system-solution container to the tube of the last pump and click on the symbol to load the system solution.

Load the system solution ← Prime system solution!

Status : Not primed

→ Empty the system solution tube
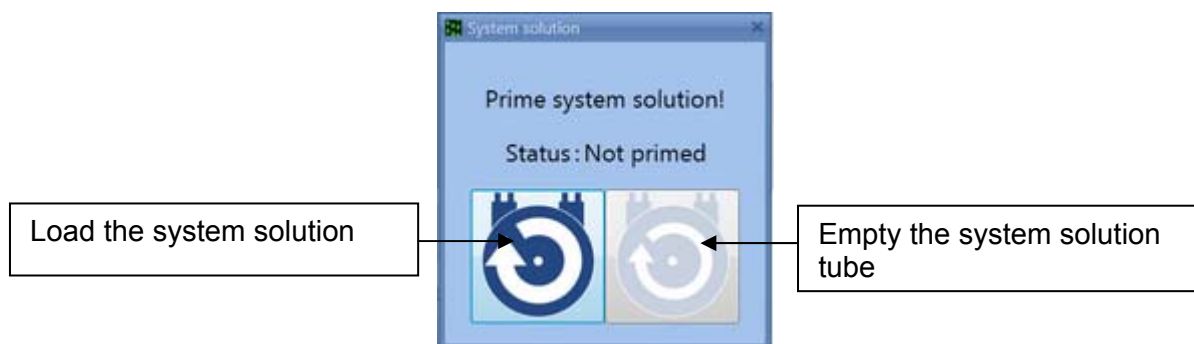
After loading the system solution, the symbol turns "**blue**" and a new symbol appears in the status bar for the system-solution container .

If the display is **yellow**, the system solution is almost empty. The work of the instrument is not impaired by this; however, it is advisable to top up the system solution.

The symbol lights up "**red**" as soon as the system-solution supply reaches a critical status. At the same time, if functions are being carried out which require system solution, an error message will be displayed and the instrument goes into "Pause" mode.

Simultaneously, an acoustic symbol sounds and a corresponding symbol is shown in the status bar. Once the system solution has been topped up, the acoustic signal stops and the needle symbol in the status bar turns blue again.

If the system fluid container is not filled up before the execution of the protocol, the system will request you to do this during the run.

To empty the system tube remove the lid of the system-solution container and

click on the symbol on the right .

7.3.2 Rinsing the pumps (priming the pumps)

The pumps can be rinsed at any time outside of a run. The standard rinsing volume is 5 ml and can be changed accordingly (recommended: 10 ml). The pumps to be used for rinsing can be chosen individually. Start the rinsing process by clicking on the symbol (cf. Fig. 34).
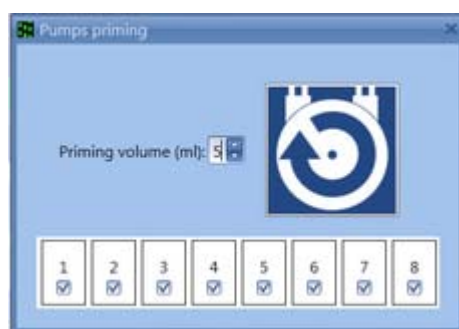

Fig. 34: selection of the pumps to be rinsed

7.3.3 Calibrating the pumps (pump auto-calibration)

By calibrating the peristaltic pumps, the system parameters are set in such a way that the reagents are dispensed, during a run, in accordance with the test specifications. In this context, the current status of the mechanical components, which may slowly change over time with operation of the instrument, is taken into consideration. If the pump calibration is not carried out according to need, it is carried out regularly during the monthly maintenance process. The executed maintenance measures are saved in the maintenance overview.

The auto-calibration function can be called up via "**Instrument maintenance**" and consists of the following steps:

Step 1 – Start-up time of the pump heads

You have the possibility to allow the old and/or new pump heads to start up before the pump-calibration process. To do this, choose the corresponding pump heads and confirm with "**Next**". You can also cancel this process with "**Cancel**".
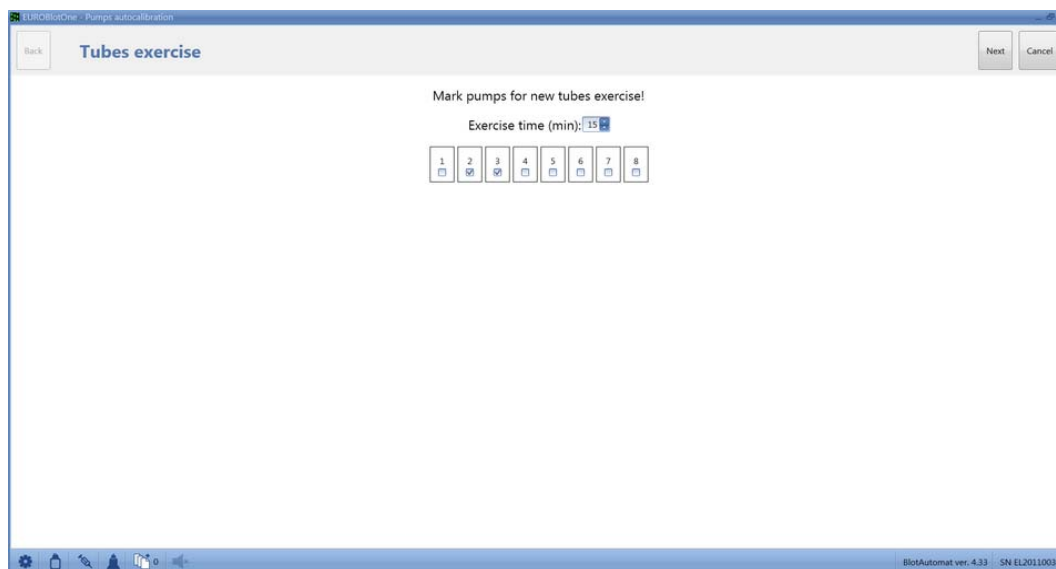

Fig. 35: setting the start-up time for various pump heads

A cancelled pump-calibration process will be saved in the maintenance overview with the note "**Canceled**". The application returns to the previous window.

Step 2 – Selecting the pump for auto calibration and rinsing

Choose the pump which is to be calibrated. After this, lead the tubes of the relevant pumps into a container with distilled water, choose the pump to be calibrated and start the rinsing process.

 Click on this button if you wish to repeat the rinsing process.

 Check whether each individual tube is completely filled with solution. If the rinsing process is successful, confirm the process with a tick.
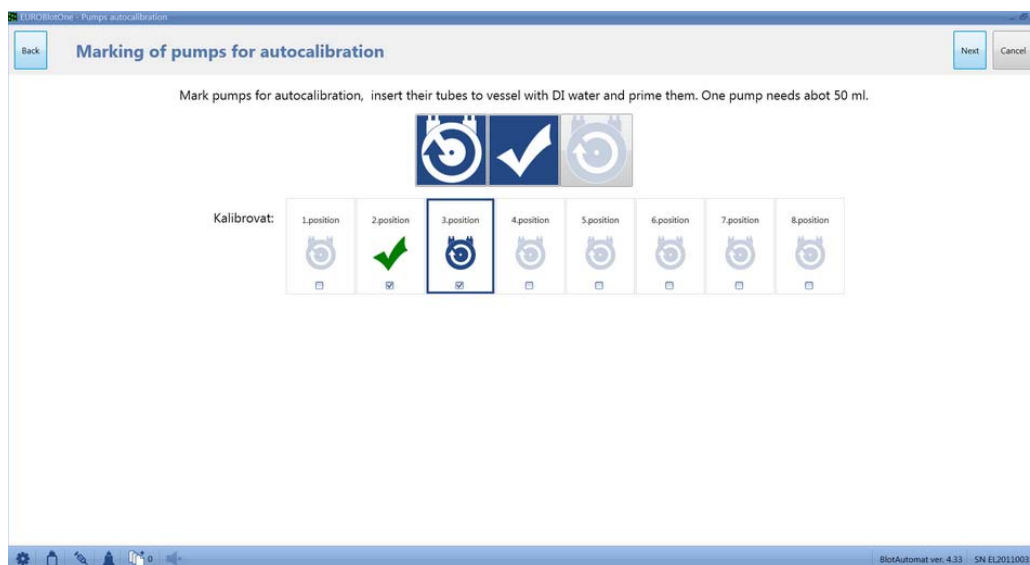
Fig. 36: auto-calibration of selected pumps.

If all pumps selected for auto-calibration have been rinsed, click on "**Next**". With "**Back**" you can return to the previous window. With "**Cancel**" the pump-calibration process is cancelled. In this case, it will be saved in the maintenance overview with the note "**Canceled**". The application returns to the previous window.

Step 3 – Connecting the calibration adapter

Place the adapter as shown in the above image on the upper housing of the instrument and affix the waste tube of the adapter to the waste bottle using Quick Connectors.
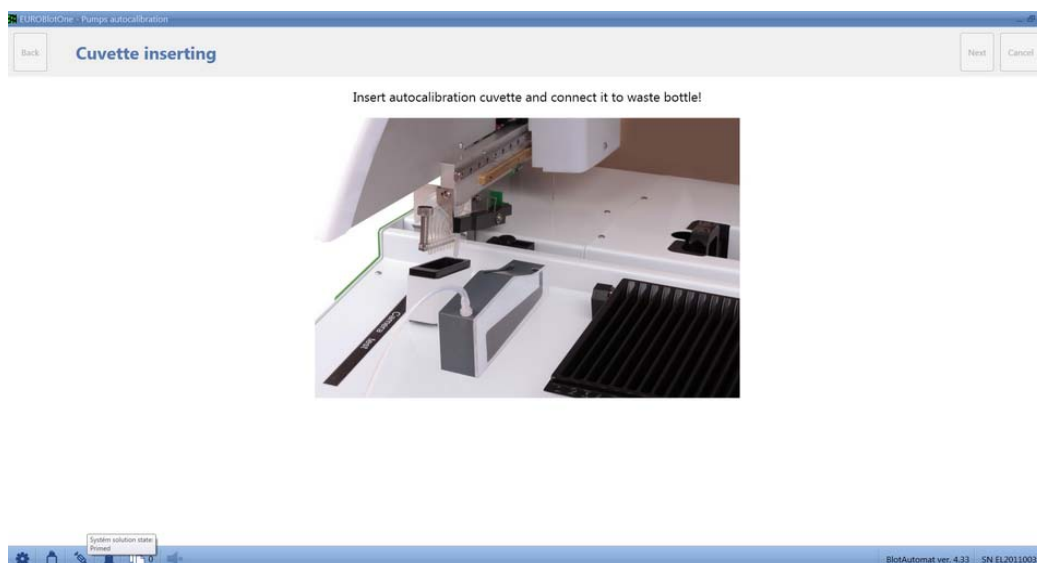
Fig. 37: connecting the calibration adapter

After this, click on "**Next**". With "**Back**" you can return to the previous window. With "**Cancel**" the pump-calibration process is cancelled. In this case, it will be saved in the maintenance overview with the note "**Canceled**". The application returns to the previous window.

Step 4 – The auto-calibration process

The pumps are calibrated individually. For each pump, the adapter is filled until the maximum level has been reached (this is detected by the liquid-level detection system of the needle). After this, solution is pumped into the waste bottle.
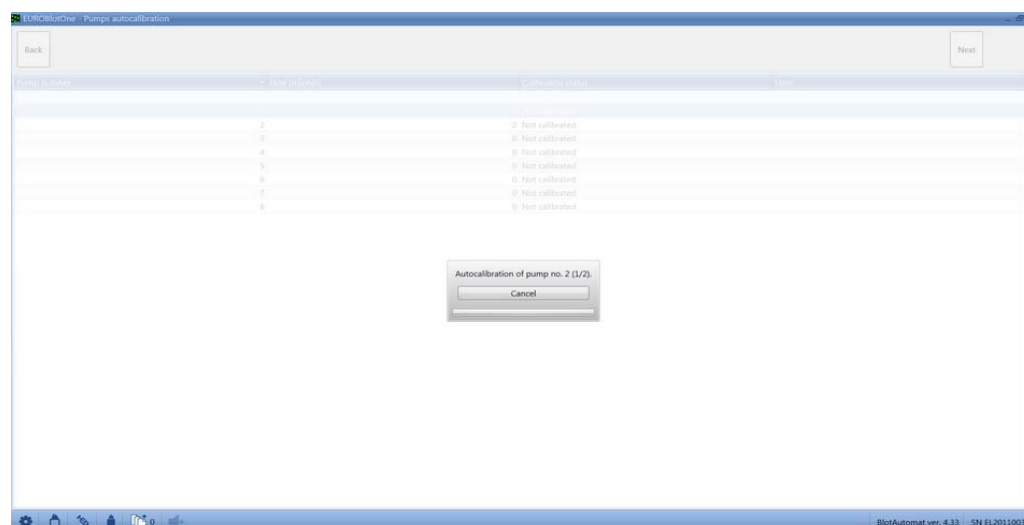
Fig. 38: status display for the auto calibration

Step 5 – Results of the pump calibration

If the pump calibration runs without errors and the given values are within the target area (65 - 95 ml/min), the pump status changes to "**OK**". If the values are outside of the target area, the status is set to "**Error**". If the auto calibration is cancelled prematurely with "**Cancel**", the pumps which would have come afterwards will not be calibrated. Their status will be set to "**Canceled**".
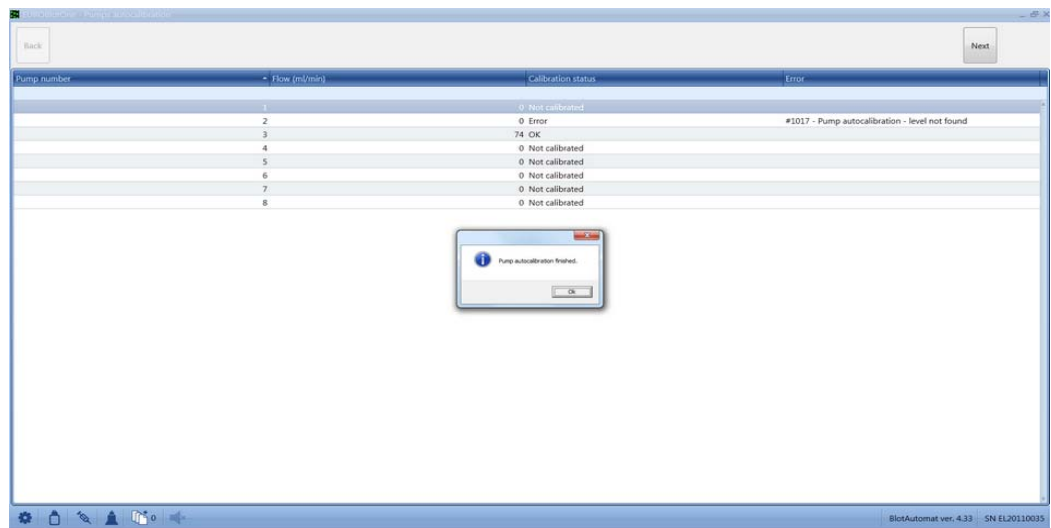
Fig. 39: completion of the pump calibration process

Confirm the window with "**OK**" and click then on "**Next**" in order to continue with the pump calibration.

Step 6 – **Completion of the pump calibration**

After completing the pump calibration, remove the adapter from the instruments and disconnect the tube of the adapter from the waste bottle. Click on "**Complete**" to continue.
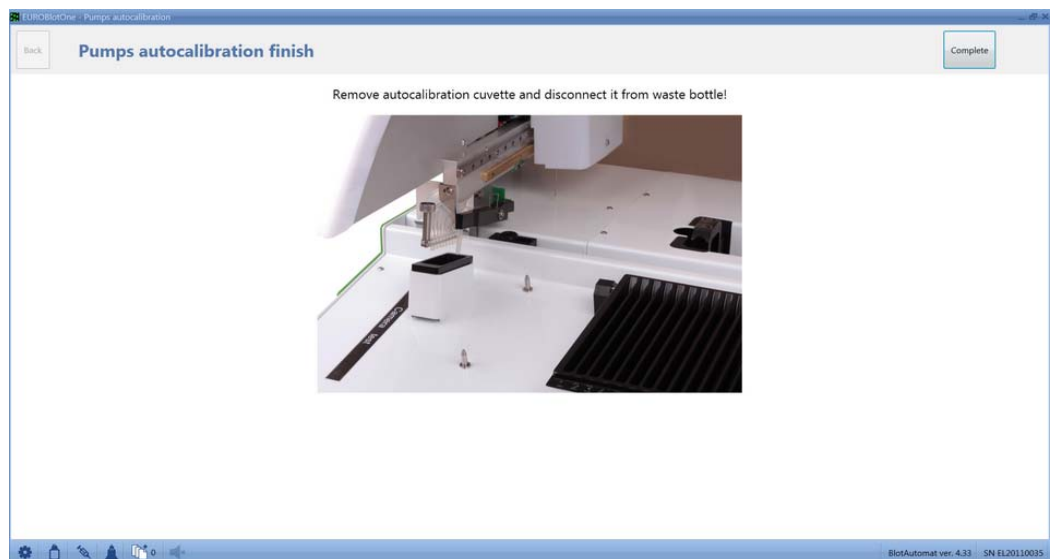

Fig. 40: completion of the pump calibration process

7.3.4 Weekly maintenance

During the weekly maintenance, the used reagents are removed from the system tubes. It should be carried out by the user regularly, seven days after the last weekly or monthly maintenance was carried out; however, the monthly maintenance replaces the weekly one.

After expiry of the seventh calendar day, a symbol appears in the status bar requesting you to carry out the weekly maintenance.

The weekly maintenance can be called up via "**Instrument maintenance**" and involves the following steps:

Step 1 – Lead reagents and system-solution tubes into a container with Setup Clean Solution

Lead reagents and system-solution tubes into a container with **Setup Clean Solution**. Click on "**Next**". The system starts to rinse. The volume of the cleaning solution can only be adjusted by the system administrator or service technician.
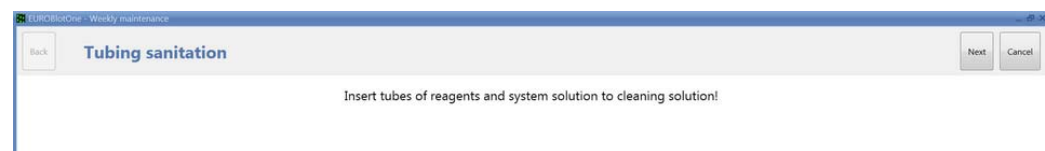
Fig. 41: system request to clean tubes with cleaning solution

The tubes will now be cleaned for a fixed period of time. The remaining cleaning time will be displayed by the system (cf. Fig. 42). After the cleaning process, an acoustic signal will sound and a window will appear.
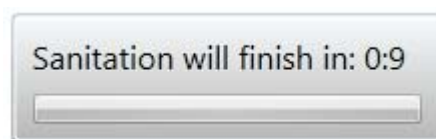

Fig. 42: time display

Fig 43: completion of the cleaning process

With "Cancel" the maintenance process can be prematurely cancelled. It will be saved in the maintenance overview with the note "**Canceled**". The application returns to the previous window.

Step 2 –   Lead reagents and system-solution tubes into a container with distilled water

Lead reagents and system-solution tubes into a container with distilled water. Click on "**Next**". The system starts to rinse.
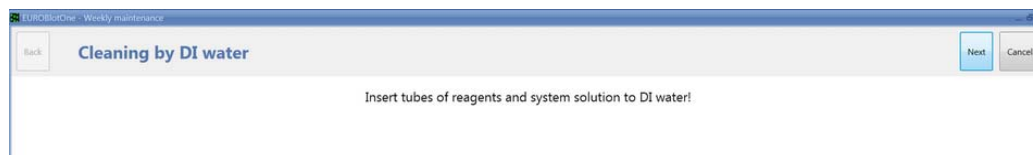

Fig. 44: system request to clean tubes with DI water.

With "Cancel" the maintenance process can be prematurely cancelled. It will be saved in the maintenance overview with the note "**Canceled**". The application returns to the previous window.

Step 3 – Take the tubes out of the distilled water container

Take the tubes out of the distilled water container Click on "**Complete**". The tubes will now be rinsed with air.
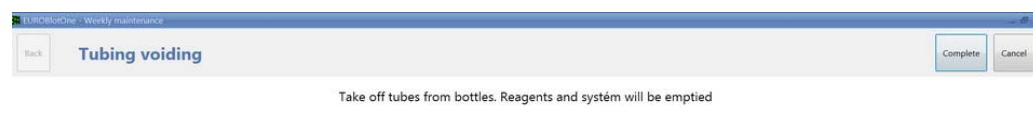
Fig. 45: draining the tubes

The completed maintenance will be saved in the maintenance overview together with the full results (see History/Maintenance history).

With "Cancel" the maintenance process can be prematurely cancelled. It will be saved in the maintenance overview with the note "**Canceled**". The application returns to the previous window.

7.3.5   Monthly maintenance

During the monthly maintenance, the system tubes are cleaned intensively and the instrument is calibrated. This is to be done regularly, after expiry of one calendar month after the last monthly or the last unscheduled monthly maintenance process.

After expiry of one calendar month, a symbol appears in the status bar requesting you to carry out the monthly maintenance.

The monthly maintenance can be called up via "**Instrument maintenance**" and involves the following steps:

Step 1 – Lead reagents and system-solution tubes into a container with Setup Clean Solution

Lead reagents and system-solution tubes into a container with **Setup Clean Solution**.

Please ensure that the waste bottle has enough capacity for the rinsing process. If you have Service Rights, you can set the volume of the cleaning solution in the settings.
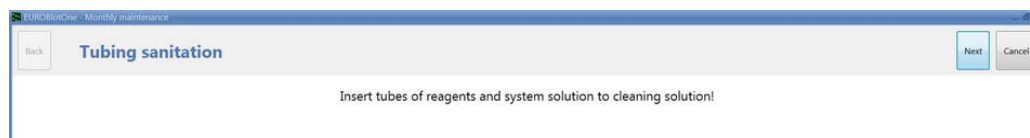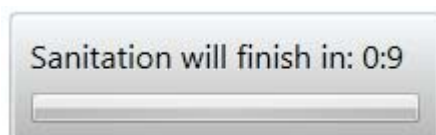

Fig. 46: system request to clean tubes with cleaning solution

The tubes will now be cleaned for a fixed period of time. The remaining cleaning time will be displayed by the system (cf. Fig. 42). After the cleaning process, an acoustic signal will sound.

With "**Cancel**" the monthly maintenance process can be prematurely cancelled. The cancelled maintenance process will be saved in the maintenance overview with the note "**Canceled**".

Step 2 – Lead reagents and system-solution tubes into a container with distilled water

Lead reagents and system-solution tubes into a container with distilled water. Click on "**Next**". The system starts to rinse.
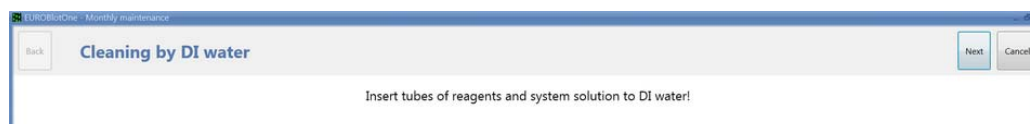

Fig. 47: system request to clean tubes with DI water.

With "**Cancel**" the monthly maintenance process can be prematurely cancelled.

Step 3 – Selecting the pump for auto calibration and rinsing

The system automatically chooses all pumps for auto calibration. You may, however, deselect pumps that you wish to exclude from the auto-calibration process. If you deselect all pumps, the monthly maintenance will be carried out without the auto calibration (cf. Fig. 48). If at least one pump is selected, the auto calibration will be carried out and saved in the maintenance overview together with the calibration results and further details on the process.
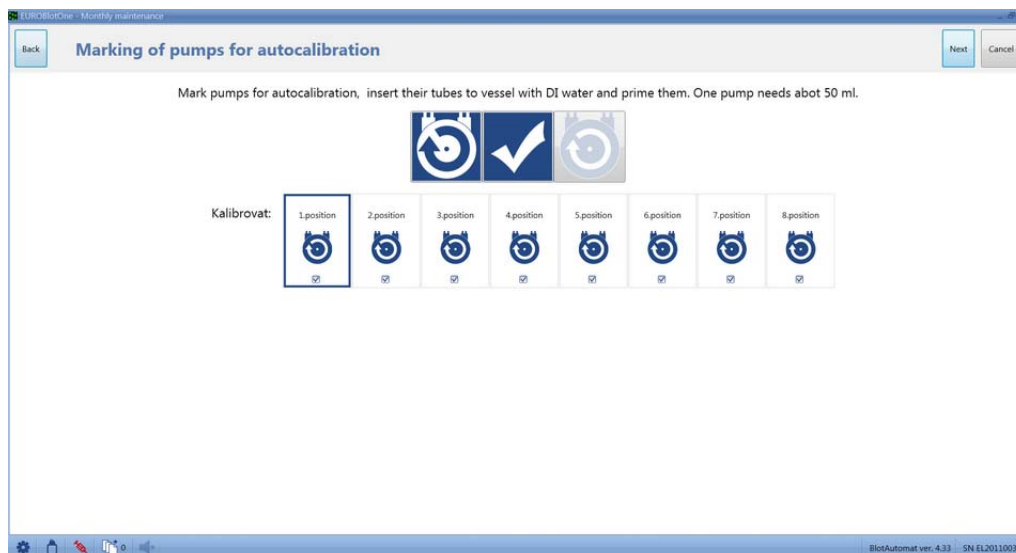
Fig. 48: select the pump for auto calibration and rinse

Choose, rinse and confirm a pump for auto calibration

Select a pump with the mouse cursor. A blue frame appears around the selected pump. Then click on the pump symbol. The pump will now be rinsed with the provided distilled water.

Check whether the tube is completely filled with solution. If the rinsing process is successful, confirm the process with a tick.
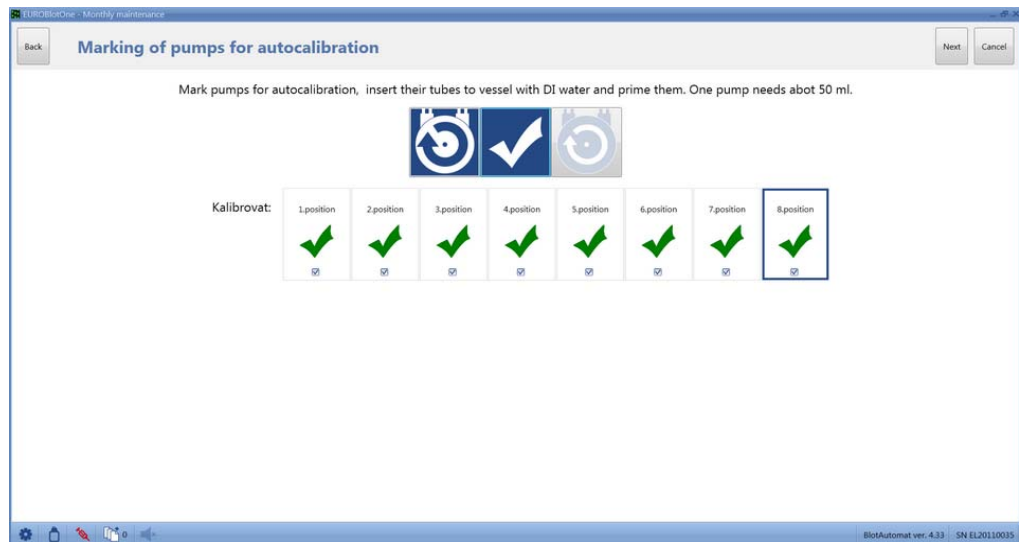

Fig. 49: successful pump calibration

With "**Cancel**" the monthly maintenance process can be prematurely cancelled. The cancelled maintenance process will be saved in the maintenance overview with the note "**Canceled**". With "**Back**" you go back to the second step of the monthly maintenance process and can then, if necessary, repeat the process of rinsing with distilled water.

Step 4 – Connecting the calibration adapter

Place the adapter as shown in the above image on the upper housing of the instrument and affix the waste tube of the adapter to the waste bottle using quick connectors (cf. Fig. 50).
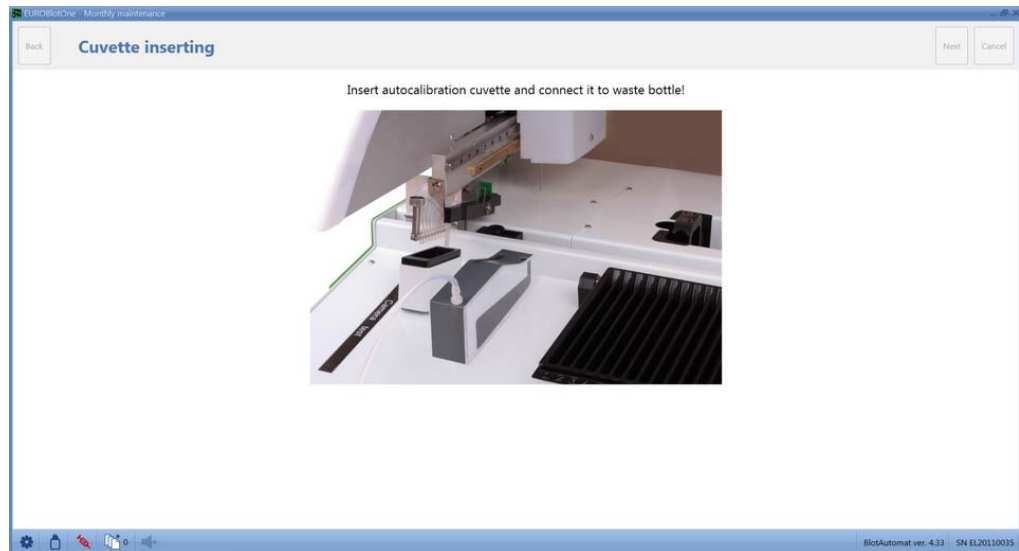

Fig. 50: connecting the calibration adapter

Confirm the connection of the adapter with "**Next**". The system will now begin with the auto-calibration process of the chosen pump. With "**Cancel**" the monthly maintenance process can be prematurely cancelled. The cancelled maintenance process will be saved in the maintenance overview with the note "**Canceled**".

Step 5 – The auto-calibration process

The selected pumps will be calibrated consecutively in the given order. In the window you can see which pump is being calibrated (cf. Fig. 51).
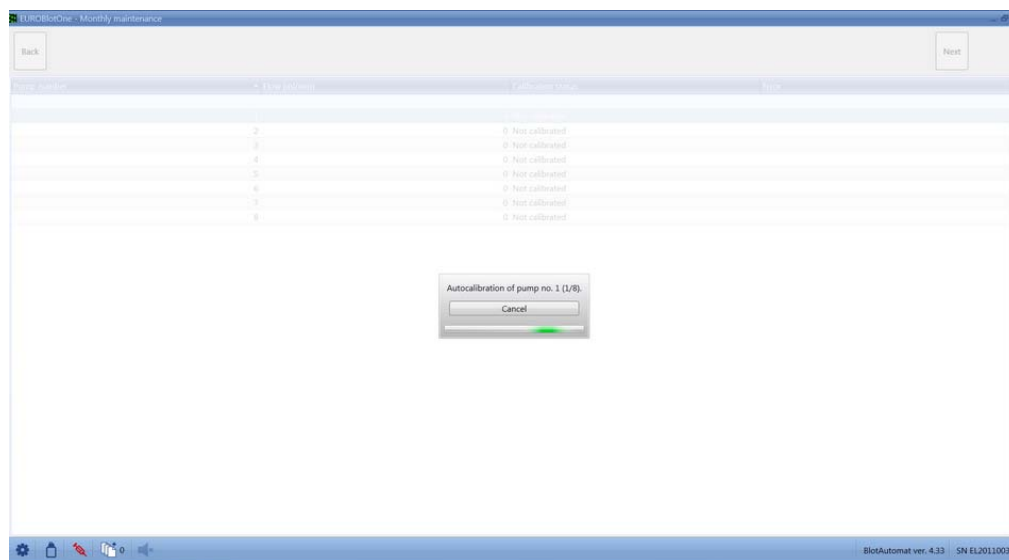

Fig. 51: the auto-calibration process

Step 6 – Results of the pump calibration

If the auto-calibration runs without errors and the given values are within the target area (65 - 95 ml/min), the pump status changes to "**OK**". If the values are outside of the target area, the status is set to "**Error**". If the auto calibration is cancelled prematurely with "**Cancel**", the pumps which would have come afterwards will not be calibrated. Their status will be set to "**Canceled**".
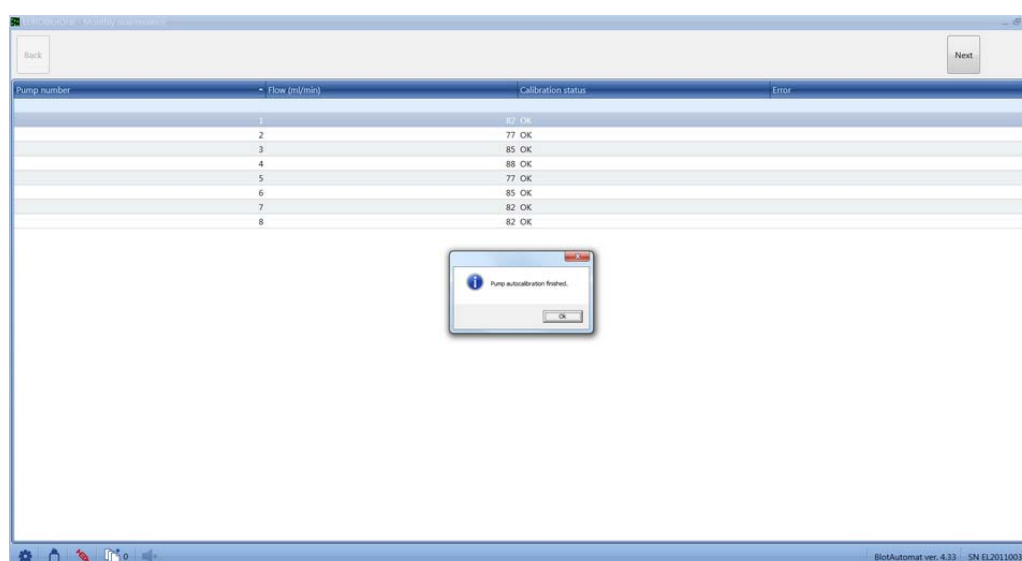

Fig. 52: auto-calibration process successfully completed

Confirm the window with "**OK**" and click then on "**Next**" in order to continue with the monthly maintenance (cf. Fig. 52).

Step 7 – Completion of the pump calibration

After completing the pump calibration, remove the adapter from the instruments and disconnect the tube of the adapter from the waste bottle.
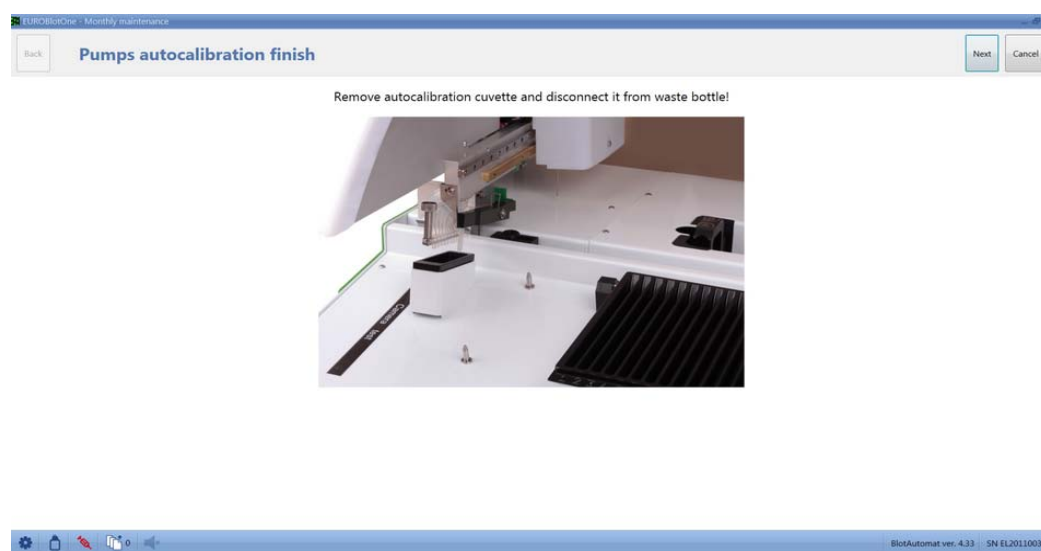

Fig. 53: completion of the pump calibration process

Click on "**Next**" to continue with the monthly maintenance (cf. Fig. 53). With "**Cancel**" the monthly maintenance process can be prematurely cancelled. The cancelled maintenance process will be saved in the maintenance overview with the note "**Canceled**".

Step 8 – Take the tubes out of the distilled water container

Take the tubes for reagents and system solutions out of the container and continue with the monthly maintenance by clicking on "**Complete**". The system removes all remnants from the tubes. With "**Cancel**" the monthly maintenance process can be prematurely cancelled.
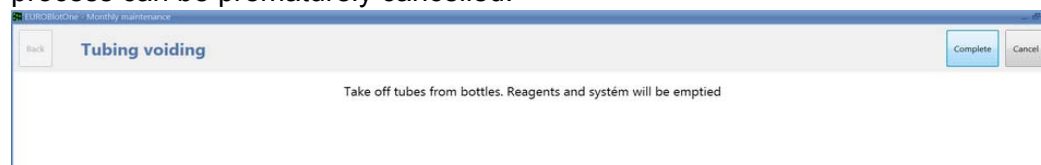

Fig. 54: take the tubes out of the distilled water container

The completed maintenance process will be saved in the maintenance overview together with the full results (see History/Maintenance history).

7.3.6 Execution of the self-test

During the self-test, the standard settings and the functionality of the instrument components are checked.

The following components are checked:

- Sensor of the instrument lid
- "Z" drive
- "Y" drive
- "X" drive
- Aspiration arm
- Syringe/(needle)
- Rocking motor
- Vacuum of the waste bottle
- Valve of the rinsing bowl
- Valve of the aspiration arm
- Barcode scanner
- Camera (only YG 0153-0101)

A successful self-test is the basic prerequisite for the operation of the instrument!

After turning on the device, a window appears to initiate the self-test.

You can skip this process by clicking on the red hand-symbol. This will not be evaluated as an error.

You can execute a self-test at any time outside of the sample processing, in order to check individual system components.

After checking the individual components, a symbol appears in the background which gives information about the status.

The green symbol indicates that the checking of the components was successful.

A red symbol indicates an error in the component. Remove the error and repeat the self-test. If the self-test was not successful, the application will be partially blocked. Only those functions are available which do not have components containing errors.
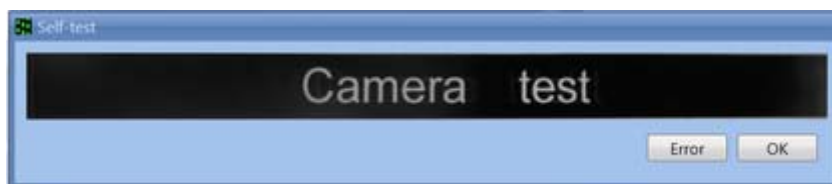During the camera test, a window appears with live transmission.

Fig. 54: camera test

If a picture of a test strip is displayed, confirm that the photographing process is correct with "**OK**". Otherwise choose "**Error**".

The processing of a run and the maintenance can only be carried out if the self-test has been successful (cf. Fig. 55)

Fig. 55: self-test - Successfully processed components

Executed self-tests will be saved in the history (see History/Self-test register).

Self-test symbols

In the status bar, the status of the self-test is displayed. A blue symbol indicates a successful self-test. A red symbol, on the other hand, indicates an error. The self-test should be repeated in this case. To do this, choose the menu point "**Instrument maintenance/Run self-test**". If the second self-test is also not successful, inform EUROIMMUN-Service.

If the application is closed after a successful self-test, the status will be saved in the system. The next time the application is opened, the blue symbol appears again.

If, on the other hand, the instrument is turned off when the application is displaying a successful self-test, the status changes. If the instrument is turned on again, the window appears again for execution of a self-test.

7.4 History

The entries concerning operation of the instrument can be viewed by normal users, administrators and service technicians. The entries are divided into categories, in order to make it easier to find information:

o   Executed self-tests
o   Type and time of maintenance
o   Communication with EUROLineScan
o   List of the processed protocols, including results.

These entries cannot be edited. Some information, however, can be printed out (self-test entries, protocols including image files).

The History menu contains the following options:

o   Self-test register
o   Maintenance history
o   List of communication with external system (communication mit EUROlineScan)
o   Protocol archive

7.4.1 Self-test register

Here, you can display an overview of all self-tests carried out, including date, time and test results (cf. Fig. 56). Using a filter function, you can search for a date. To do this, click in the light blue field in the header of the list. Now type in the desired date. The system will then show you the entries saved which accord with this date. If you press the arrow symbol, a calendar opens from which you can also select a date.
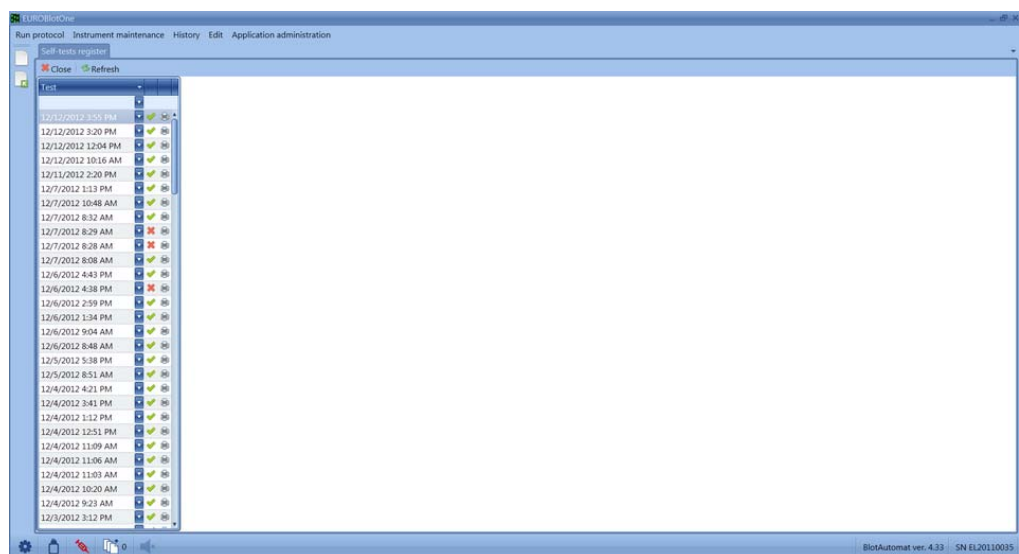

Fig. 56: self-test register

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Self-test details

If you select a self-test from the overview, you will be shown further information relevant to this test. The components checked will be listed together with the respective result symbol.

This symbol appears if the self-test of the module was successful.

This symbol appears if the entire self-test was successful.

If the self-test for a module has an error, a red symbol appears.

The self-test is then regarded by the system as indicating total error and is allocated a red X-symbol. The error description is contained within the self-test details.
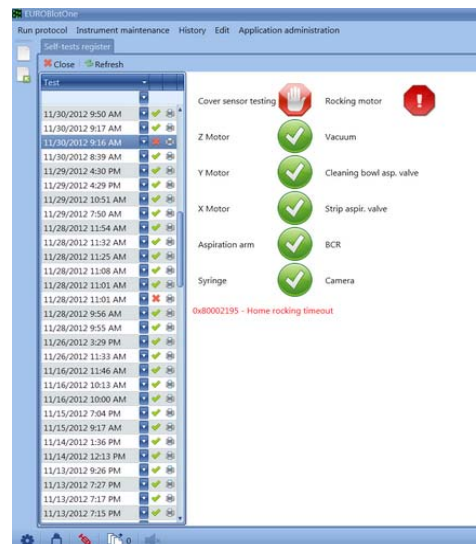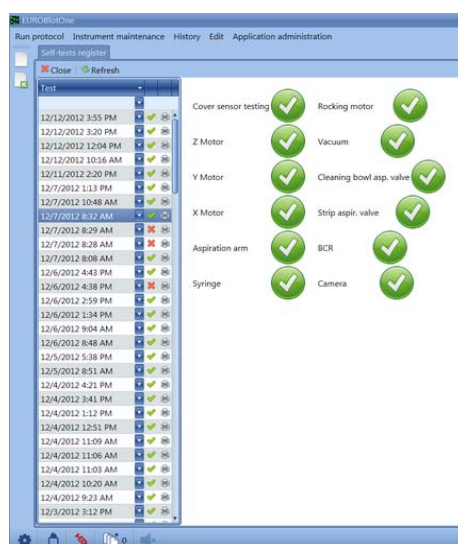

Fig. 57: self-test details

Printing out the self-test results

To print a self-test result, select it from the overview and click on the printer symbol. With this function, the self-test entry can be printed or saved on the PC.

Fig. 58: print preview of "self test results"

7.4.2 Maintenance history

Here, you can display an overview of all executed maintenance processes. The list contains all pump-rinsing, weekly and monthly maintenance, and pump calibration runs that have been carried out. The entries are sorted according to date. The search can be further specified using filters (date, type IV result of maintenance).

Fig. 59: maintenance history

Entries on monthly maintenance – These contain the date, time and the result of maintenance. The result is either "**Finished**" or "**Canceled**".

If you choose a maintenance process from the overview, the corresponding maintenance results will be displayed. In the case of monthly maintenance or auto-calibration, additional information regarding the pump calibration, which is part of the monthly maintenance, will be displayed. The result here is either "**OK**" or "**Error**". If the pump is not marked for auto calibration, the following message appears: "**Not calibrated**" (cf. Fig. 60 and 61).

Fig. 60: maintenance detail view

Fig. 61: overview in the monthly maintenance

7.4.3 Communication with EUROLineScan (List of communication with external system)

The application can communicate with the EUROLineScan software and receive data for processing (see imported protocol from EUROLineScan). The data is transferred in XML-format either locally or, by means of a network connection, via online data exchange.

The data transfer protocol is HTTP. To transfer data, the software must be open and the PC must be connected to a network, or EUROLineScan must be directly installed on the PC of the EUROBlotOne.

All communication with EUROLineScan is archived and can be called up via "History". The overview contains the following information:

- **Date** – Arrival date of the query from EUROLineScan
- **Service** – Designation of the query from EUROLineScan
- **Protocol** – Designation of the protocol that was part of the query
- **Response** – Response Status of the query from EUROLineScan

Fig. 62: list of communication processes

All messages from EUROLineScan and the corresponding answers are contained in the overview.

Further information on the communication with EUROLineScan can be found in Chapter: Communication with EUROLineScan (7.1.12)

7.4.4 Protocol archive

Protocols that have already been processed can be viewed in the protocol archive. It contains all protocols for which processing was begun by the instrument and which were completed either successfully or with errors or which were prematurely cancelled. In the uppermost line, the search can be refined with a filter (cf. Fig. 63).

The protocol archive can be called up via "**History**" and contains the following information:

- **Identificator** – Protocol identifier from EUROLineScan. A protocol which was newly created in EUROBlotOne does not contain an ID.
- **Name** – Name of the protocol for identification in the software.
- **Date of creation** – The date on which the protocol was created or imported from EUROLineScan.
- **Date and time of completion** – Date and time at which the protocol was completed.
- **State** – The state gives information regarding the success of the processing: "**Processed**" – All planned work processes were carried out successfully, "**Not processed error**" – An error occurred during the run or the run was prematurely cancelled by the user.

Fig. 63: protocol archive

To display detailed information, choose a protocol from the overview and click on the folder symbol. The following details will be shown to you:

- **Protocol name** – Name of the protocol for identification in the software
- **Written by** – Creator of the protocol
- **State** – The state gives information regarding the success of the processing: "**Processed**" – All planned work processes were carried out successfully, "**Not processed error**" – An error occurred during the run or the run was prematurely cancelled by the user.
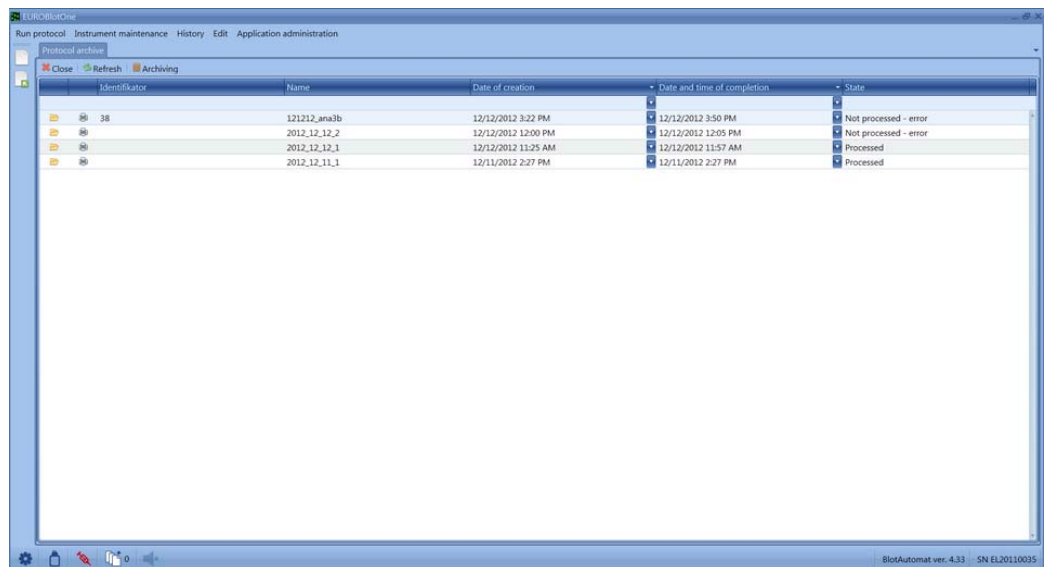- **Date and time of creation** – The date and time at which the protocol was created or imported from EUROLineScan.
- **Date and time of completion** – Date and time at which the protocol was completed.

The following information is displayed for a sample:

- **Strip order** – Order of the samples on the protocol
- **Sample ID** – Unique designation of the sample (barcode)
- **Test** – Designation of the tested parameters
- **Lot** – Designation of the test lot
- **Shoot** – Photograph of the incubated test strip
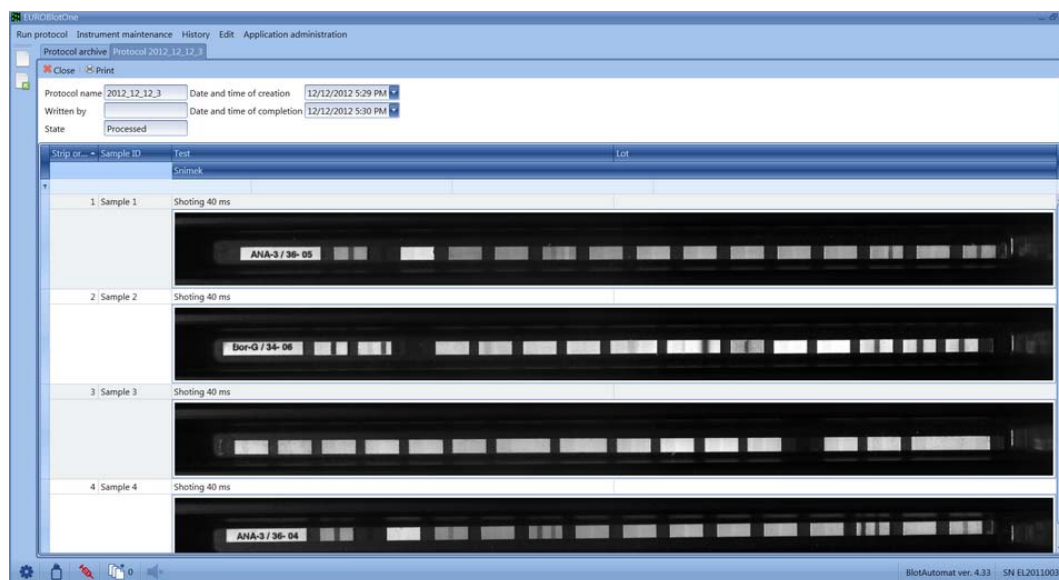

Fig. 64: display of individual samples in the protocol

Printing of processed protocols

The documents of a protocol can be printed from both the detail view and from the overview. To do this, click on the printer symbol.

If the test strips were photographed during the test run, the corresponding pictures will be shown (cf. Fig. 65).
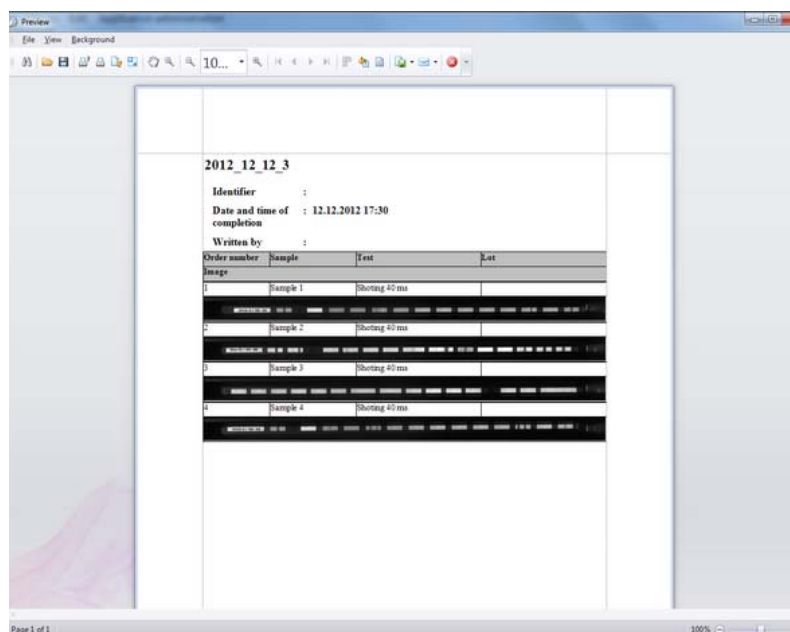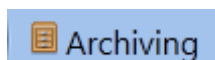

Fig. 65: print preview of processed protocols

Archiving of protocols

Archiving Protocols can be saved in the archive, using the archive symbol in the protocol overview. Archiving includes the transfer of old unused data from the application to an archive for later use/display by the user.

Creation of a protocol archive – To do this, click on the arrow in the line "**Select the final date (include) for protocol archiving**". Now, choose a date from the drop-down calendar indicating the date up to which the protocols are to be archived. Then confirm by pressing "**Archive protocols**". The system will now create an archive of all protocols which were completed by the chosen date (cf. Fig. 66).
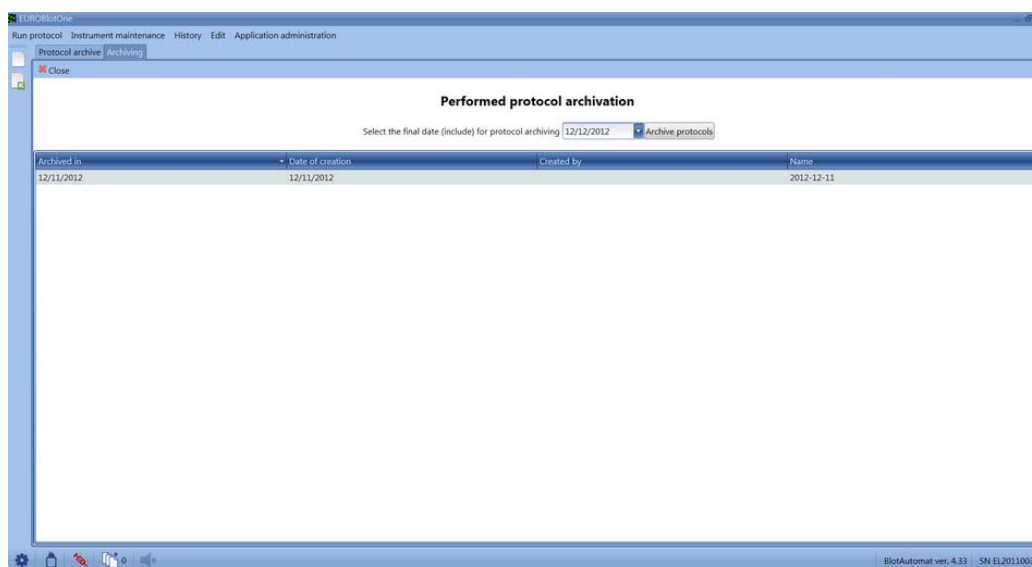
Fig. 66: archiving protocols

After successful archiving, the path of the saved data will be shown to you (cf. Fig. 66).
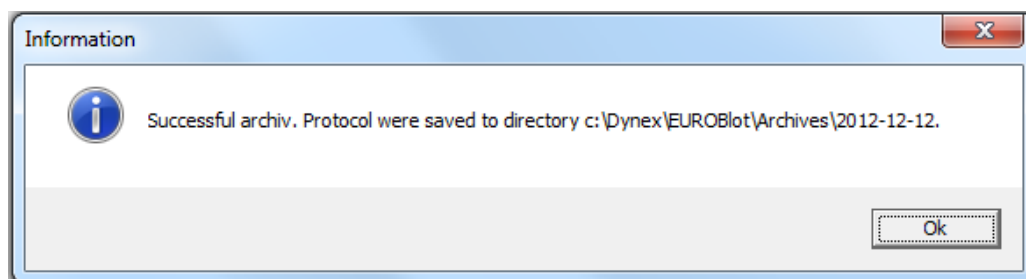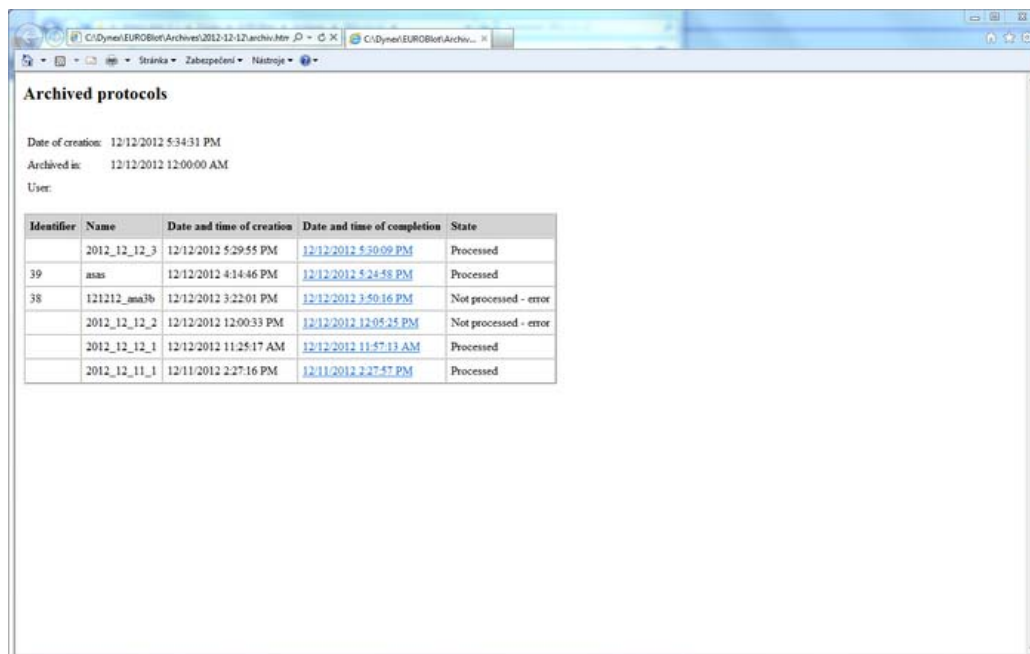
Fig. 67: confirmation of the archiving of the protocol

The system creates an archive file in XML format with the corresponding protocols. The archived protocols can be viewed outside of the application using an Internet browser.

Fig. 68: overview of archived protocols

By means of a double-click on the protocol entry in the archive file, you can display detailed information on a specified protocol, if necessary including images (cf. Fig. 69).

Fig. 69: display of detailed information for archived samples

7.5　　Edit

The "**Edit**" menu is only accessible for system administrators and service technicians. Here, tests can be compiled to test groups. Furthermore, reagents are defined which can then be chosen during the creation of a test. For sample analysis, it is necessary to choose parameters which have already been allocated to tests with a specified process. Due to the fact that various tube types are used in laboratories, the tube types that are to be used for sample tubes and control tubes must first be entered into the software in order to be able to select them later during preparation of a protocol.

The "**Edit**" menu contains the following menu points:

o　Assay group list
o　Tests register
o　Reagents register
o　Tubes register

7.5.1　Assay group list

This list contains individual assays which are grouped together to test groups. Assays within the same test group go through the same test process during sample analysis. Test groups can only be created and edited by system administrators.
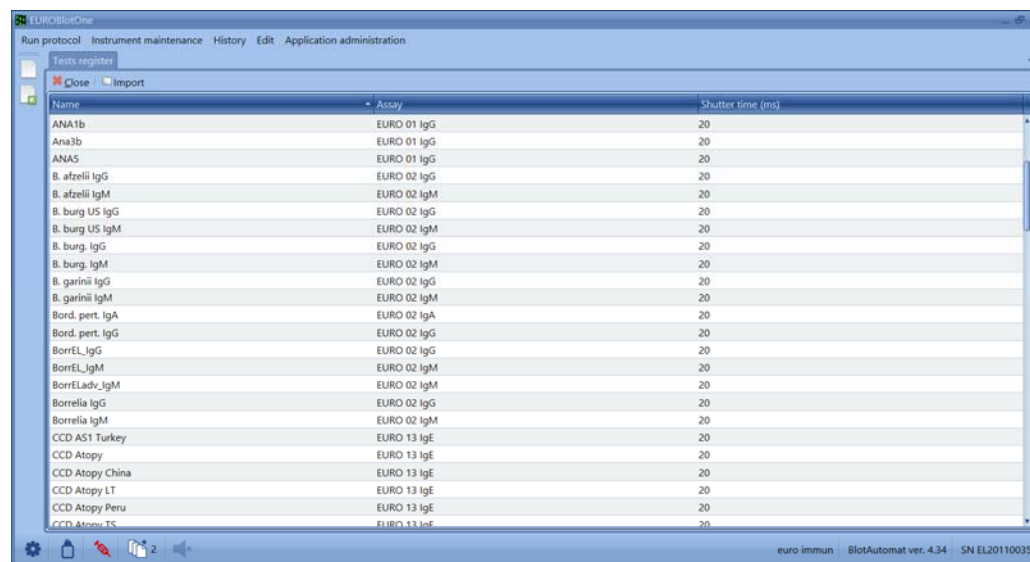
Fig. 70: overview of test groups

If you are a system administrator or a service technician, you can import the test groups, in the form of a file, into the software. To do this, click on the button "**Import**" (cf. Fig. 70). In the Windows Explorer window that then opens, select an XML document with the test group definition. Confirm your selection with "**Open**". A check will now be made to ensure that the data contained within the file has the correct structure. If this is the case, the test groups will be imported into the test group list. If the test groups are already contained in the list, a corresponding system message will appear. You can now decide whether you want to overwrite the already existing test group.

7.5.2 Tests register

This list contains individual parameters which are linked to the corresponding tests (cf. Fig. 70). In this overview, it is also possible to see which possible combinations exist.

Fig. 71: parameter list

Importing of parameters
A system administrator or service technician can import parameters which were created in other software

To do this, click on the button "**Import**". In the Windows Explorer window that then opens, select an XML document with the parameter definition. Confirm your selection with "**Open**". A check will now be made to ensure that the data contained within the file has the correct structure. If this is the case, the parameters will be imported into the parameter list. If the parameters are already contained in the list, a corresponding system message will appear. You can now decide whether you want to overwrite the already existing parameters. If the imported parameter is linked to a test which is already defined in the software, you can decide whether the parameter is to be imported with this test link. Parameters which are not already allocated to a test will be allocated automatically. Only parameters which are allocated to a test can be inserted later into a worklist, during the creation of the protocol.

7.5.3 Reagents register

In order to process a test, the reagents must be entered into the software. During the creation of the new test, reagents will be chosen from the list and allocated, for example, to the action "dispense".

Display reagents list

To display the reagents list, choose the corresponding menu point in menu "**Edit**" (cf. Fig. 72). Here, the following properties of the reagents will be displayed:

o   "Antidrop"
o   "Reagent saving"
o   "Prime before run"
o   "Pumps assignment"

Fig. 72: reagents list

Antidrop – With this option you prevent reagents drops from being released whilst moving over the tray. To make this possible, the system draws the solution back into the reagent tube directly after dispensing.

Reagent saving – Remnants of reagents will be drawn back out of the tube and into the bottle, after pipetting, to use reagents economically.

Prime before run – Before dispensing, the system loads the reagents (approx. 0.5 ml go into the waste bottle).

Pumps assignment – By entering an ordinal number (1 to 8) the preferred order is defined for the pumps to release reagents.

7.5.4 Tubes register

Tube types which are to be used for sample analysis must be set in the software. The tube types must be defined exactly in order to provide for precise pipetting. Tubes are subdivided into sample tubes and control tubes.

A standard tube is automatically saved in the software for both of these tube types.

Sample tubes – only one tube type can be saved and used. This tube type can only be placed at the rack positions 1-44. Bar code recognition is possible at these positions.
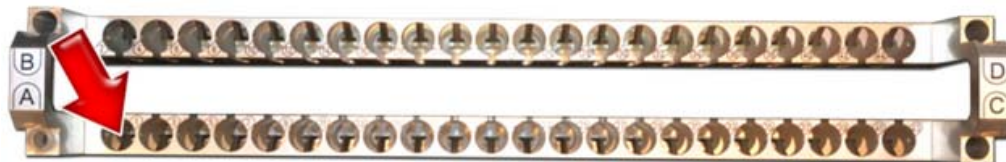
Fig. 73: position of the sample tubes

Control tubes – are intended for control material (e.g. positive controls) and are placed at the positions A, B, C and D. Bar code recognition is **not** possible at these positions (cf. Fig. 74).

Fig. 74: position of the control tubes

Tube types can only be saved in the system by a system administrator or a service technician.

During the creation of a worklist, the system chooses a sample tube type for all samples in accordance with the system settings. However, before the sample analysis, you can allocate another tube type.

Entering a new tube type

A system administrator or service technician can define a new tube type under "**Edit**". This takes place in several steps. Here, the instrument moves its arm and displays its position in the sample rack in order to define the properties of the new tube type.

Step 1 – Define the tube type

In the field "**Name**" (text field) enter the name of the tube type and tick whether it is a "**Control tube**". Now enter the inner diameter of the tube (in mm without decimal places) into the field "**Tube inner diameter**". This value is required for liquid-level detection during sample pipetting. Click on "**Next"** to move on to the next step. With "**Cancel**" you can cancel the process (cf. Fig. 75).
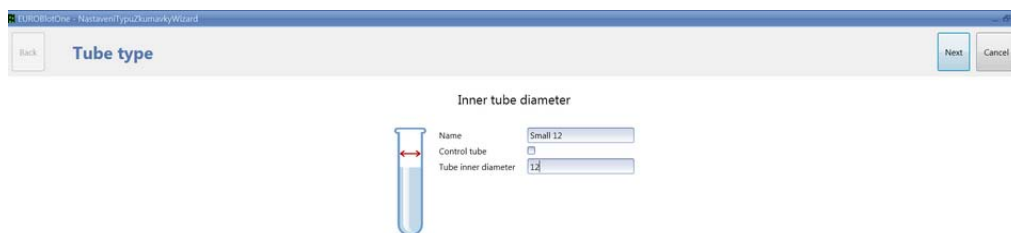
Fig. 75: creation of a tube type

Step 2 – Placing the tube in the instrument

Place the tube at the position indicated by the arrow (Position 1 of the numerical positions for sample tubes or Position "A" for control tubes). Click on "**Next**". Now the arm will be moved above the appropriate position in the sample rack (cf. Fig. 76).

With "**Cancel**" you can cancel the process. The arm then moves back to its starting position.
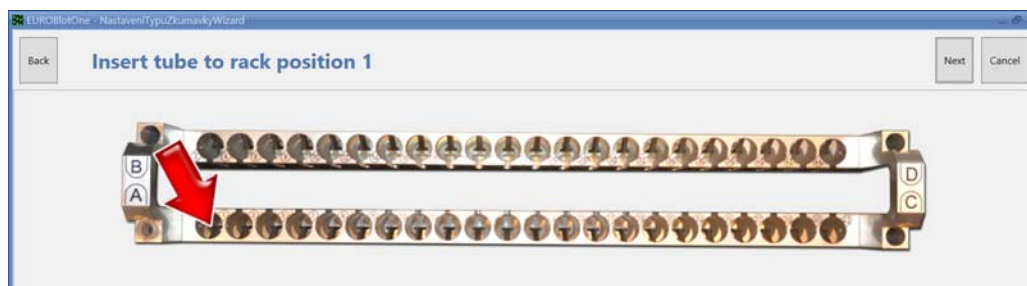
Fig. 76: placing the tube in the instruments

Step 3 – Defining the upper edge of the tube

By means of the control arrow, move the pipetting needle to above the middle of the upper tube edge. This is the starting point for the liquid-level detection during the pipetting process. Click on "**Next**" to move on to the next step. The determined value will then be saved by the system.

With "**Cancel**" you can exit from the process. The arm then moves back to its starting position.
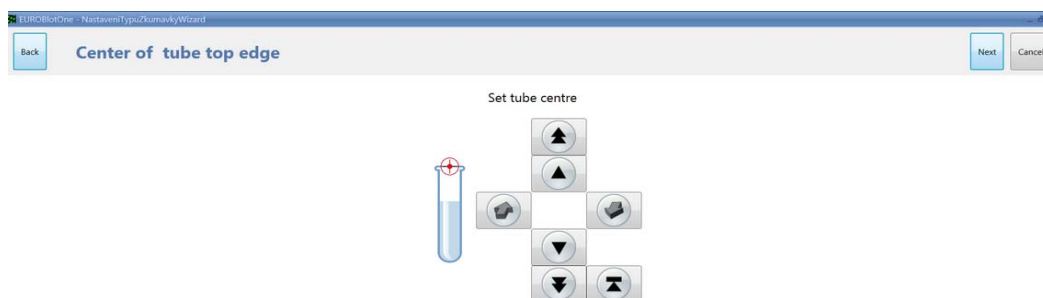
Fig. 77: defining the upper edge of the tube

Step 4 – Defining the upper edge of the tube

Use the arrow to move the pipetting needle so deeply into the sample tube that around 2 to 3 mm of air remain before the bottom of the tube (cf. Fig. 78). Here you can use the displayed Z-coordinate, to the right of the arrows, for orientation. The step sizes are set to fixed values. If the end of the pipette meets the floor of the tube, the displayed coordinates cannot accord with the actual position of the needle.

In this case, click on the symbol displayed above. The end of the pipette moves back to its starting position and you can repeat the process. Click on "**Complete**" to save the new tube type. The determined value will then be saved by the system. Afterwards, the tube list, now containing the new tube type, will be displayed.

With "**Cancel**" you can exit from the process. The arm then moves back to its starting position.
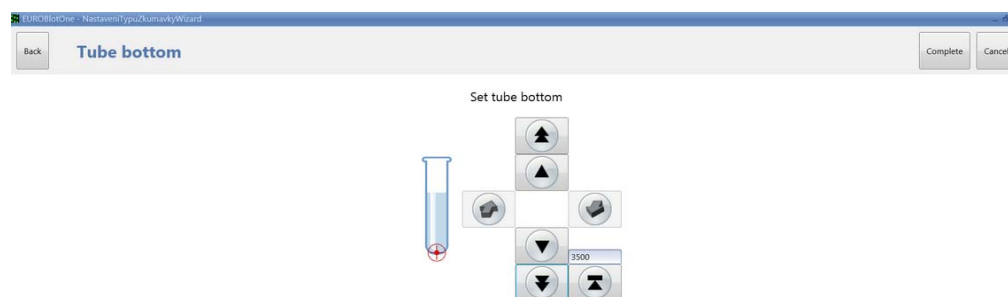
Fig. 78: defining the bottom of the tube

Checking the new tube type

You can check the properties of the new tube type. To do this, choose the corresponding tube type via "**Edit**" from the list and click on the folder symbol. Now, the individual steps to create the new tube type are displayed and you can view the properties.

Removing a tube type

A system administrator or service technician can remove the tube type from the list. To do this, choose the corresponding tube type and click on the eraser symbol.

Exporting tube types

A system administrator or service technician can export the tube types that are saved in the sample tube list via "**Export**". To do this, use the displayed Windows Explorer window to choose the place in which the file with the exported tube types is to be saved. Type a file name and click on "**Save**". The system saves all tube types as an XML file at the desired place. The file can then be imported to other software.
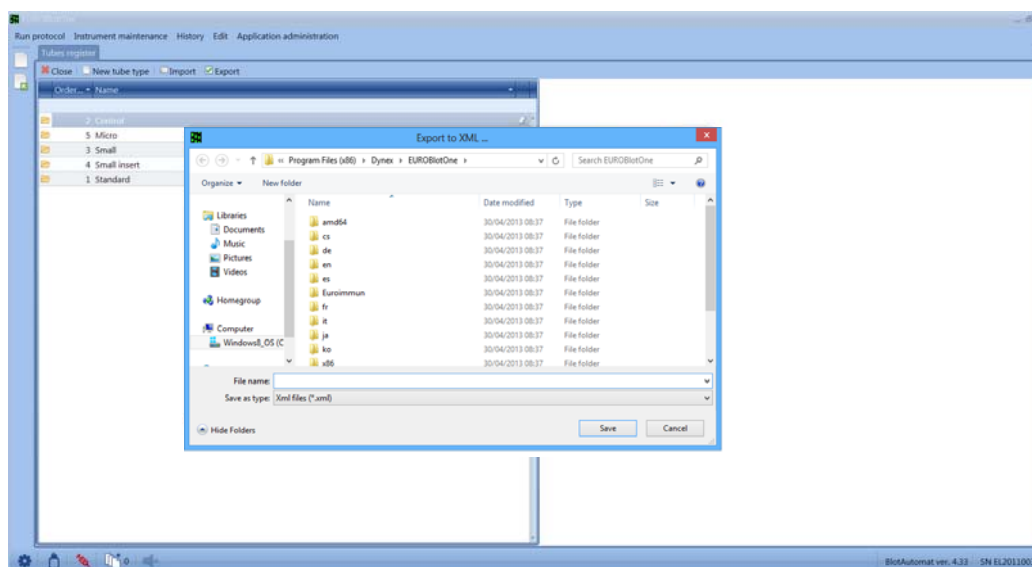
Fig. 79: exporting tube types

Importing tube types

A system administrator or service technician can import tube types in the tube list so these do not have to be manually created. To do this, click on "**Import**". In the displayed Windows Explorer window choose the XML file that you wish to import. Click on "**Open**". The file will now be imported by the system. Afterwards, you will receive a system message informing you whether the import was successful or not. If the import is not successful, it is possible that the file is damaged or that it does not have the proper format.
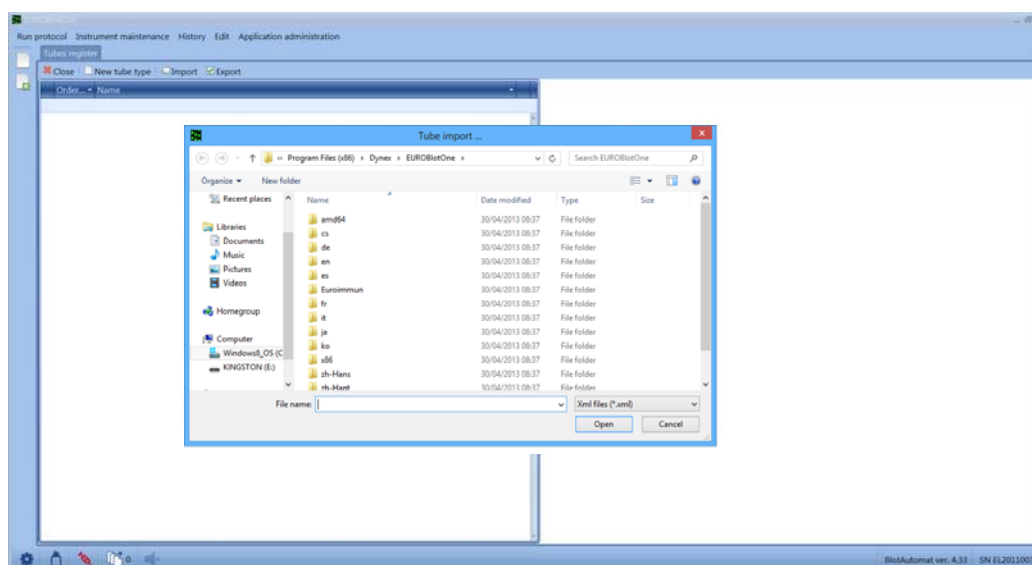
Fig. 80: importing tube types

7.6 Application administration

The administration menu of the software makes it possible to change settings in the software. Here, a system administrator or service technician can, for example, perform administrative tasks on the registered users. If desired, log-ins can be allocated. Otherwise, the software can also be used without registration. Registered users can change their password when they need to. As a system administrator, you can also make changes to the settings of the software.

The administration menu contains the following sub-points:
- Login
- Password change
- List of users
- Logout
- Settings
- BCR settings (barcode settings)
- Segments import
- Old data deleting
- About application (info)

7.6.1 Register (Login)

A normal user can register on the system or work without registration. Registration is only necessary when the option "**Login required**" is ticked in the settings.

Login − type in your "**User**"-name and your password. Click on "**Login**" to log into the system.

The name of the user who is logged in will be displayed below-right in the status bar.

If user name or password has been wrongly entered, the following error message appears.

The user name of the user who is logged in will be copied automatically into the field "**Written by**" when a new protocol is created.

7.6.2 Change password

After the system administrator or service technician has created a new user list, he/she can then allocate passwords to the individual users. These are used to log into the system.

Creating a password

 If you have system administrator or service technician rights, choose a user from the user list and click on the key symbol. Now type a password into the displayed window and confirm with "**OK**".

A user who is logged in can change his/her password at any time. To do this, choose "**Password change**". In the window that then opens, type your old password in, then your new password which you have to confirm once. Click then on "**OK**". The new password is saved.

If a field has not been filled out correctly, an error message will appear.

7.6.3 List of users

A system administrator or service technician can create a new user.

Fig. 81: creating a new user

New user – here, a new user can be defined. After issue of a user name and password, the new user can log into the system.

To create a new user, the following fields must be filled in.

- **User name** – Name with which the user logs into the system
- **Front title** – Title of the user (e. g. Prof.) – optional
- **Name** – First name of the user (e.g. Anna)
- **Surname** – Surname of the user (e.g. Smith)
- **Rear title** – Any title after the name (e. g. Dipl.-Ing. or MSc.) – optional
- **Role** – Rights of the user within the application (user, admin, service; cf. Fig. 82).

A user has the following rights: Execution of new and imported protocols, viewing overviews for instrument data and carrying out maintenance work. System administrators and service technicians have the following additional rights: creation or deletion of normal users. System administrators are furthermore entitled to create and remove system administrators and service technicians.

Fig. 82: user details

After the new user has been created, he/she will be added automatically to the user list.

 A system administrator or service technician can change the properties of the user by clicking on the folder symbol or

 remove him/her permanently from the system with the eraser symbol.

7.6.4 Logout

Here, the user can log out and leave the program. After you have clicked on "**Logout**", a system query appears. If you click "**Yes**" you will be logged out of the system and the status bar will be updated accordingly. If you click "**No**", the process will be cancelled and you will remain logged in.

System query:

7.6.5 Settings

The settings of the program can be changed by system administrators (cf. Fig. 83).
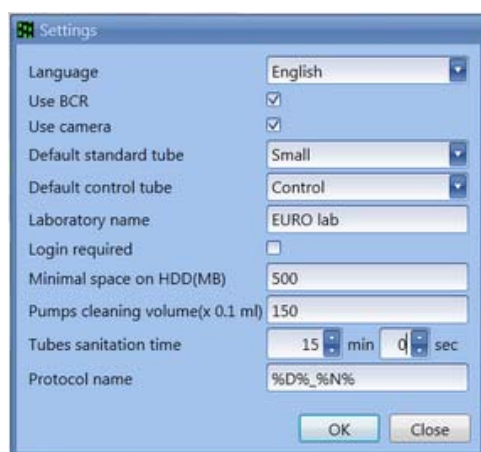
Fig. 83: settings of the program

Language – Here, the language of the application can be set.

Use BCR – Here, is determined whether or not the barcode scanner is to be used during the protocol execution. If this option is not ticked, the samples will be entered manually from an external file or imported from EUROLineScan.

Use camera – Determines whether the camera is to be used during the protocol execution. (only possible with YG 0153-0101)

Default standard tube – Choose the tube type which is to be used as a standard from the list of saved standard sample tubes in the system. It will be inserted automatically at the positions 1 to 44 of the sample racks in the new worklist.

Default control tube – Choose the tube type which is to be used as a standard from the list of the saved control tubes in the system. It will be inserted automatically at the positions A to D of the sample racks in the new worklist.

Laboratory name – Name of the laboratory which is working with the instrument. The laboratory name will be automatically inserted into the protocol template.

Login required – Here, is determined whether the users have to login to work with the program.

Minimum space on HDD (MB) – The minimum amount of data space which is required to be able to work with the software (data saving).

Pumps cleaning volume (x 0,1 ml) – The volume used to rinse the pumps during weekly and monthly maintenance.

Tube sanitation time – Time required for the cleaning solution to take effect in the tubes during weekly and monthly maintenance.

Protocol name – Chosen protocol name which is displayed in the protocol template.

7.6.6 Barcode settings (BCR settings)

A system administrator or service technician can set the barcode type which shall/can be read by the barcode scanner.

The more barcodes are chosen, the more time the barcode scanner will require to register the barcodes. **It is recommended to choose only barcodes which are also used by the user (Fig. 84).**
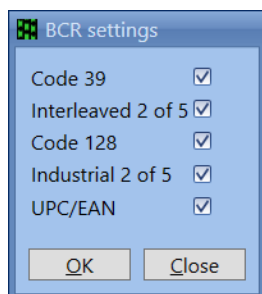
Fig. 84: barcode settings

7.6.7 Import firmware segments (segments import)

Using this function, a system administrator or service technician can import various firmware segments from components of the EUROBlotOne. To do this, click on "**Import**". In the displayed Windows Explorer window choose the XML file that you wish to import. Click on "**Open**". The file will now be imported by the system. Afterwards, you will receive a system message informing you whether the import was successful or not. If the import is not successful, it is possible that the file is damaged or that it does not have the proper format.

7.6.8 Deleting old data

A system administrator or service technician can remove data which is no longer required from the software. The data will be irrevocably deleted. This includes the following: maintenance entries, entries on self-tests, EUROLineScan protocols and log files saved by systems outside of the software (log files are to be found on the hard disk of the computer and, in case of problems, can be called up there directly).

To delete the data, the system chooses, as standard, the date that lies exactly one month previously to the day on which the deletion is performed (e.g. on 1.11.2012, the date as of which deletion will be undertaken will be 1.10.2012). The date can be changed if desired.

To delete the data, click first of all on the arrow beside the date field. Now choose the desired date, as of which deletion is to be undertaken, from the drop-down calendar. A safety query will ask you again, whether you really want to delete the data. If you confirm the data query with "**Yes**", the data will be permanently deleted (cf. Fig. 85).
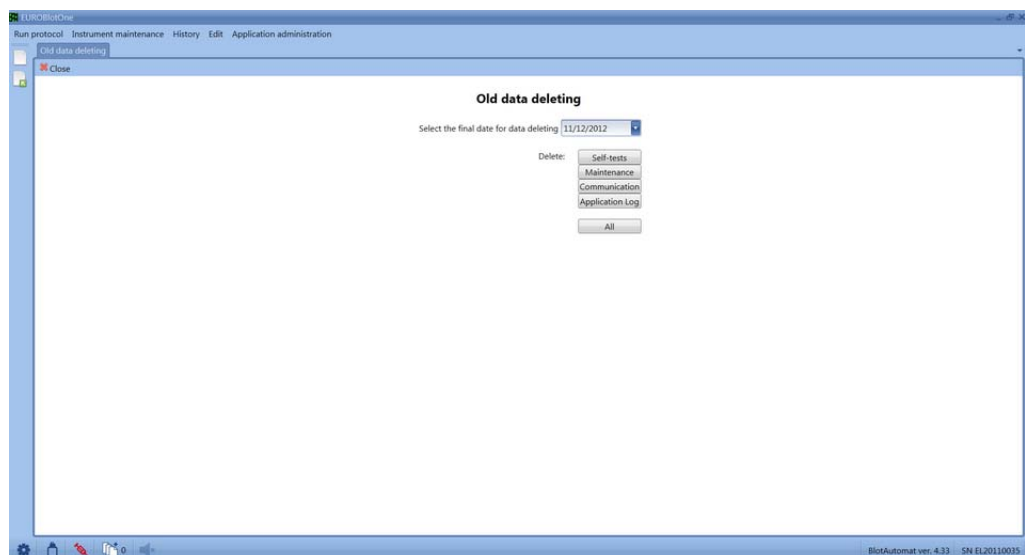
Fig. 85: deleting old data

Old data deleting

Select the final date for data deleting 11/12/2012

12 December 2012

	November 2012					
Su	Mo	Tu	We	Th	Fr	Sa
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8

Clear

Confirmation

Really delete data?

Yes   No
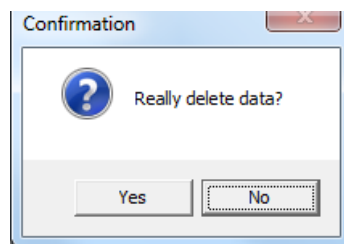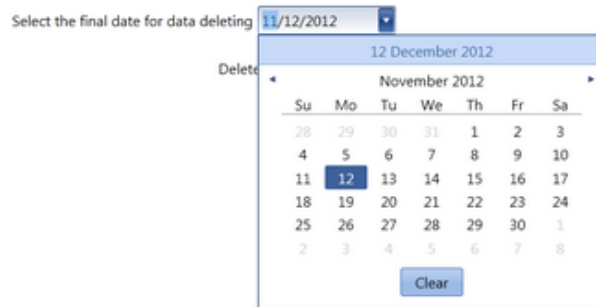
Superfluous data of all kinds can be deleted in one step using the following button All .

8   Explanation relevant to the instrument

8.1   Surveillance of the current instrument status

The status bar contains symbols for surveillance of the instrument status. At the right, the connected instruments and the firmware are displayed. At the left, the symbols for maintenance are situated, such as self-test, waste bottle, system-solution container and the number of imported protocols to be executed.

If the yellow maintenance symbol is shown, maintenance must be performed on the instrument. By rolling over the symbol with the arrow, it can be seen which maintenance interval is due (weekly/monthly maintenance).

- If you double-click on the yellow symbol, a window opens to start the instrument maintenance (see 7.5.4/7.5.5).
- Maintenance entries can be viewed under "**History/Maintenance history**".

The blue symbol indicates a successful self-test.

A red symbol indicates that the self-test contained errors or that no self-test has been carried out.

- The self-test can be initiated under "**Instrument maintenance/Run self-test**".
- If during the self-test an error occurs, the colour changes from blue to red.

The self-test can be carried out anew via the error message. If the window has been closed, select this again under "**Instrument maintenance/Run self-test**".

The fill-level symbol for the waste bottle

  Sufficient capacity is available.

  A yellow symbol indicates that the maximum level will soon be reached.

  A red signal indicates that the waste bottle is full. Draining by aspiration is no longer possible.

- If you see a yellow or red symbol, remove the lid and empty the waste bottle. If you have to empty the waste bottle during a protocol run, it is recommended to pause the instrument for a short space of time.

System solution display

  A red symbol indicates that no system solution has been loaded yet. As soon as the system solution is available, the symbol colour changes to blue

 .

- To load system solution, choose under "**Instrument maintenance/System solution**".

The liquid-level symbol for the system-solution container

 Sufficient liquid-level

 Minimum liquid-level

 Container empty Processes which require system solution cannot be carried out.

- If you see a yellow or red symbol, remove the lid and fill the container. If you have to fill the system-solution container during a protocol run, it is recommended to pause the instrument for a short time.

Instrument status display

Any change in the instrument status (instrument maintenance, self-test, waste and system solution) will be indicated by a colour change accompanied by an acoustic signal.

 The acoustic signal can be activated and deactivated by clicking on the loudspeaker symbol. WARNING: The error status will remain until the problem has been solved.

 This symbol refers to protocols from EUROLineScan which still have to be carried out. The number corresponds with the number of protocols that are in the queue.

8.2 Communication with EUROLineScan

The EUROBlotOne software can communicate with the program EUROLineScan. This occurs mainly during import of protocols which can be processed by EUROBlotOne. The processed protocol can then be either transmitted to EUROLineScan or it can be deleted. As a EUROBlotOne user you cannot influence the communication; however, it is possible to understand what is going on via the communication entries in the overview "**HistoryCommunication with external system**".

The communication process:
The communication consists of electronic requests from the EUROLineScan software and answers from the EUROBlotOne application.

Scenario 1. – **Instrument status report**

Query – EUROLineScan queries EUROBlotOne on the instrument status.

Answer – EUROLineScan transfers the answer regarding the instrument status. This can be positive (instrument is ready for operation) or negative (instrument is not ready for operation). If the answer is positive, communication will be continued.

Scenario 2. – **Receiving a protocol**

Query – EUROLineScan transfers a protocol for processing to the EUROBlotOne software. The software checks the incoming protocol for identical sample IDs, known parameters and the number of tests (maximum 44).

Answer – The software gives an answer on whether the protocol has been received.

If the protocol has been received successfully, it will be displayed in the protocol list. Furthermore, the number of imported and unprocessed protocols in the status bar is increased.

Scenario 3. – **Protocol status report**

Query – EUROLineScan queries the status of the protocol.

Answer – The protocol can/could be processed, is still in the queue or was executed with errors (the run was not successful).

If the protocol was executed (status "**Processed**"/"**Unprocessed-error**"), EUROLineScan will continue with the communication.

Scenario 4. – **Transfer of strip images (only with YG 0153-0101)**

Query – EUROLineScan queries the result of the protocol (protocol ID and numbers of the strips) which were processed by EUROBlotOne (status "**Processed**"/"**Unprocessed - error**").

Answer – The strip images which were created during the processing of the protocol are transferred to EUROLineScan.

Scenario 5. – **Deletion of protocols**

Query – EUROLineScan requests the deletion of a protocol from the software. If the protocol is contained within the software, it will be deleted by the system.

Answer – The software informs EUROLineScan whether the protocol has been deleted or not (in case it was not found).

8.3   Camera calibration (only with YG 0153-0101)

The camera calibration is carried out every half year by the service technician. If necessary, the calibration can also be checked by the customer.

Step 1 – Create a calibration protocol in EUROLineScan

Under "**File**" you will find the menu point "**EURBlotOne calibration**" with which the calibration protocol can be created in EUROLineScan.

With "**Send procol**", the calibration protocol will be transferred to EUROBlotOne. Press "**Close window**" to cancel the camera calibration (cf. Fig. 86).
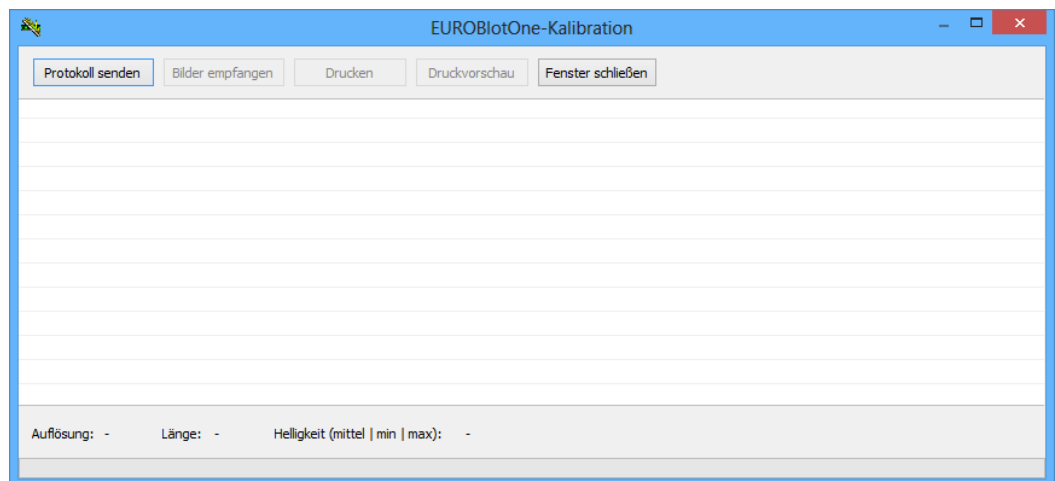
Fig. 86: calibration – Camera

An information window appears to inform you whether the transfer to EUROBlotOne was successful or not.
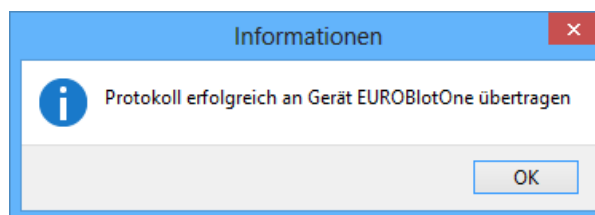
Confirm the window with "**OK**".

Step 2 – Insert the camera template

Insert the camera templates with the holder above the left edge of the rocker table, so that the version number can be read.

Fig. 87: camera templates

Step 3 – Processing of the calibration protocol in EUROBlotOne

Under "**Run protocol** – **Imported**" or by clicking the button, you can view the list of all imported protocols from the EuroLineScan programme ![icon] (cf. Fig. 88).
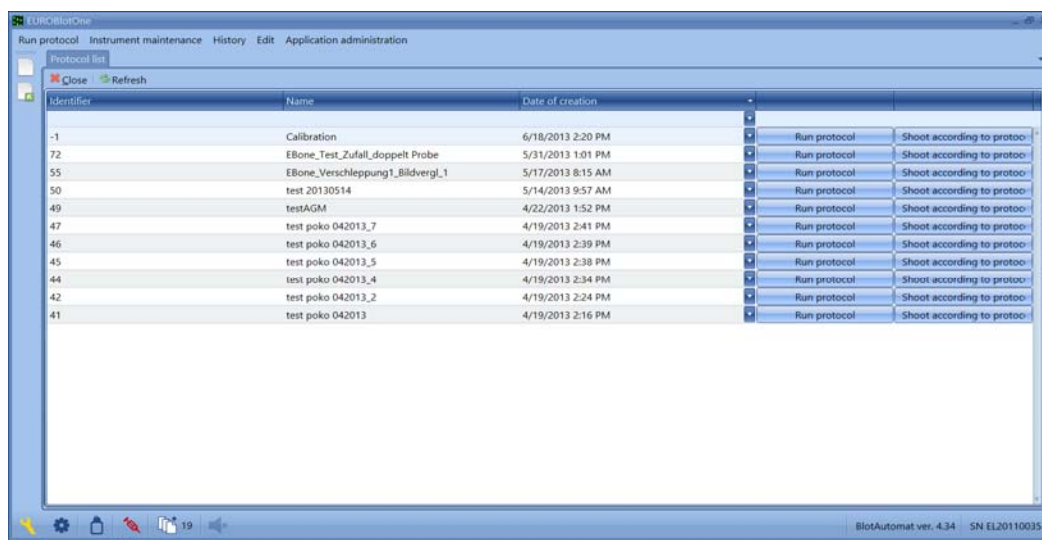
Fig. 88: imported protocols

Choose the protocol "**Calibration**" and click on "**Shoot according to protocol**". Confirm all the following windows with "**Next**".

8 Explanation relevant to the instrument

After completion of photographing you can conclude the photographing process with "**Complete**" (Fig. 89). If the photographic process is successful, the images will be saved on the hard disk. They can be viewed via the details of the process protocol (see History/Protocol archive).
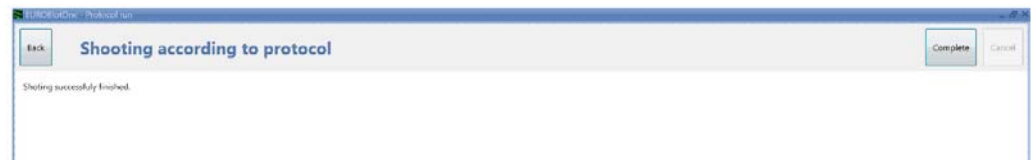
Fig. 89: confirm successful photographic process

Step 4 – Evaluate the calibration protocol in EUROLineScan

The picture taken will be evaluated with "**Receive image**".
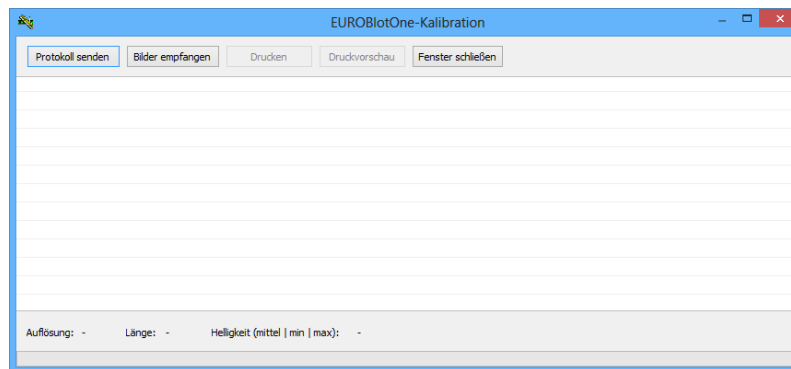
Fig. 90: receive images

If the evaluation was successful, an information window with "**EUROBlotOne calibration was successful**" will appear which you have to confirm with **OK**". If evaluation is not within the valid range, this will be indicated in the information window and the calibration curve will be displayed in red (Fig.91). In this case, repeat the camera calibration process.
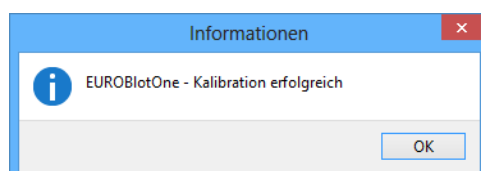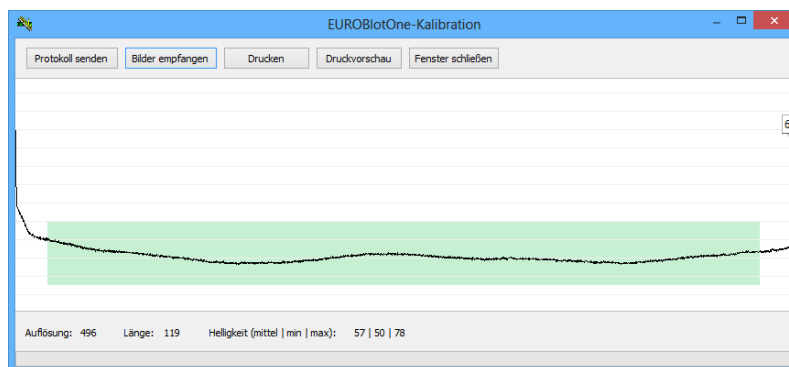
Fig. 91: calibration curve

The evaluation can be printed out with "**Print**" (cf. Fig. 92). The calibration protocol will not be saved, including validation data.
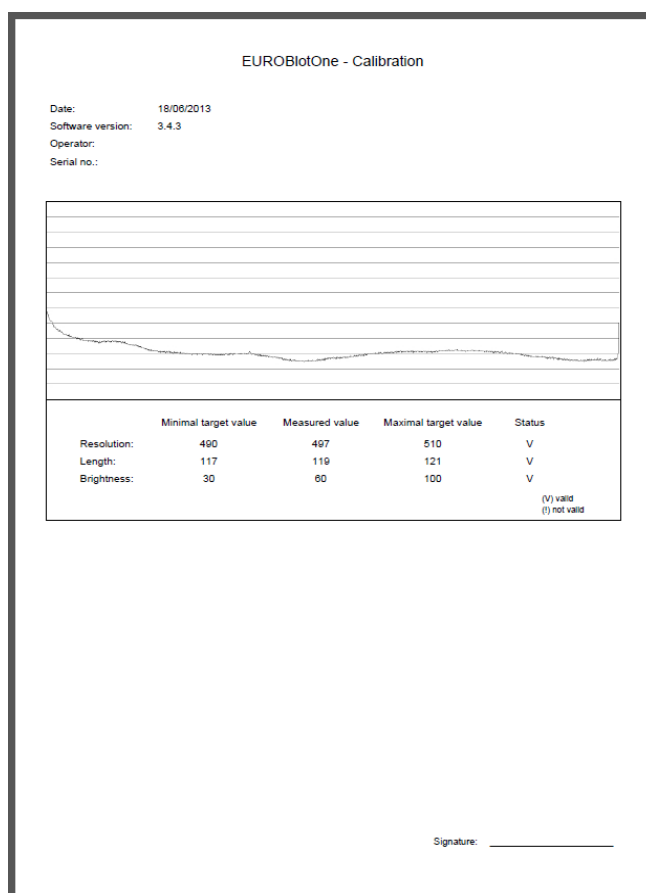
Fig. 92: calibration protocol

9   Error messages

If there is an error, the system pauses and outputs an error message. Once the error has been taken care of, the system will continue with the interrupted activity.

9.1   Display of the error message

Error messages occur in various ways depending on instrument activity. Each error is defined by a number and an error description.

1. Error message during the self-test (red symbol and red error description, cf. Fig. 93).
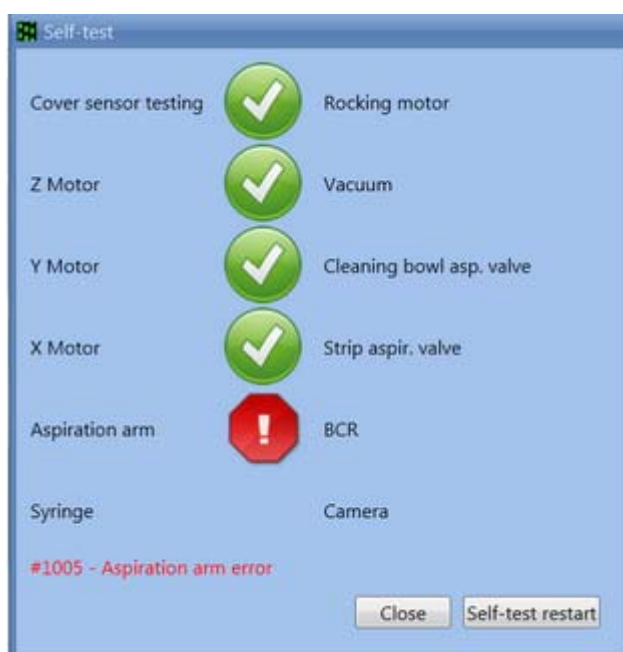
Fig. 93: error message of the self-test

After the error has been taken care of, the self-test can be carried out again. To do this, click on "**Self-test restart**".

2. Error message in a dialogue window (faulty instrument activity)
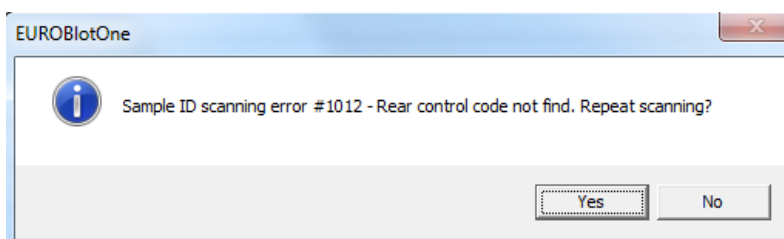
The message in the dialogue window also contains a recommendation of how to continue after correction of the error.

3. Standard error message in instrument window

 Besides the ID and description of the error, the message also contains the loud speaker symbol with which the acoustic alarm signal can be switched off.

As soon as the button "**Continue**" is active, the instrument activity can be continued.
In another case, the activation of the "**Continue**" button is dependent on the successful self-test. Here, click first of all on "**Run self-test**" to run the self-test.
It is not possible to continue the task during the error. If the task cannot be processed, the "**Cancel**" button allows it to be cancelled. The software returns to the previous screen.

 If the task is cancelled, the self-test will be categorised as "**not performed**" and the instrument functions will be blocked.

9.2   List of error messages

No.	Error message	Description	Trouble Shooting
1001	Z does not leave home	The reference sensor of the Z-movement is permanently activated.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error at the reference sensor or motor – Contact service.
1002	Aspiration arm is not at sensor	Aspiration arm sensor is not active or the arm is in the upper home position.	The aspiration arm is possibly jammed. Remove obstacle and initiate self-test. Error on aspiration arm – Contact service.
1003	Y does not leave home	The reference sensor of the Y-movement is permanently activated.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error at the reference sensor or motor – Contact service.
1004	X does not leave home	The reference sensor of the X-movement is permanently activated.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error at the reference sensor or motor – Contact service.
1005	Aspiration arm error	The aspiration arm sensor is permanently activated.	The movement of the aspiration arm or the Y-movement is possibly blocked. Remove obstacle and initiate self-test.
1006	Syringe does not leave home	The reference sensor of the syringe pump is permanently activated.	The syringe pump of the system-solution valve is blocked. Initiate self test; if this is not successful, contact service.
1007	Rocking does not leave home	The reference sensor of the rocking table is permanently activated.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the sensor or motor – Contact service.
1008	Vacuum switch error	Vacuum sensor activated during self-test.	Aspiration tube is blocked. Remove foreign substance and initiate self test. Error in vacuum sensor – Contact service.

1009	Vacuum low	Aspiration power at waste bottle too low.	After emptying the container, check the flask seal. Continue or initiate self-test Check connections of the waste tubes to the instrument. If necessary, push the tubes into the valve openings properly. Continue or initiate self-test Error in vacuum pump, regulator or vacuum sensor – Contact service.
1010	Cleaning bows aspiration valve error	Pressure in waste bottle does not go down after the pinch valve of the tube is opened to suck out the rinsing station.	Aspiration tube is blocked. Remove foreign substance and initiate self test. Error in pinching valve – Contact service.
1011	Strip aspiration valve error	Pressure in waste bottle does not go down after the pinch valve of the tube is opened to suck out the tub.	Aspiration tube is blocked. Remove foreign substance and initiate self test. Error in pinching valve – Contact service.
1012	Rear control code not found	The control code at the back of the sample tube rack was not read before scanning the sample barcode.	The sample rack was either not placed into the instrument or was placed in the wrong way around. Correct position and repeat process. Soiled mirror. Clean mirror and repeat process. Error in the barcode scanner or mirror mechanism – Contact service.
1013	Front control code not found	The control code at the front of the sample tube rack was not read before scanning the sample barcode.	Error in the barcode scanner or mirror mechanism – Contact service.
1014	BCR error - self-test no read	Control code in instrument not read during self-test.	Soiled mirror. Clean mirror and repeat process. Error in the barcode scanner or mirror mechanism – Contact service.
1015	BCR error - self-test incorrect read	Control code in instrument read wrongly during self-test.	Soiled mirror. Clean mirror and repeat process. Error in the barcode scanner or mirror mechanism – Contact service.

1016	Pump failure during autocalibration	After auto-calibration of the peristaltic pumps, liquid-level can not be measured. Even if a maximum number of repetitions are carried out.	Change pump head and repeat calibration. Error in the pump motor or in the liquid-level detection system (adapter runs over) – Contact service.
1017	Autocalibration - level not found	Needle does not recognise the liquid-level in the calibration adapter after dispensing.	Error in liquid-level detection system – Contact service.
1018	Pump flow below range	Pump throughput is under the guide value of 65 ml/min.	Change pump head and repeat calibration.
1019	Pump flow above range	Pump throughput is above the guide value of 95 ml/min.	Change pump head and repeat calibration.
1020	Sample not found	During pipetting, liquid-level in sample tube is not recognised.	Sample volume too low. Manual pipetting. Wrong tube type chosen. Manual pipetting. Use correct tubes in the next run. Error in liquid-level detection system – Contact service.
1021	Insufficient volume in needle for dispensing	Needle volume insufficient for pipetting.	Error in protocol – Report error to manufacturer.
1022	System solution cleaning bowl priming error	System solution was not recognised in the rinsing fountain during the preparation phase.	Lid with aspiration tube is not fitted to the system-solution container. Put lid on and repeat process. Change pump head and repeat calibration. Error in the peristaltic pump motors or in the liquid-level detection system of the needle – Contact service.
1023	Syringe 3-way valve error	3-way valve did not switch properly during the preparation phase. System solution flowing through the needle into the rinsing fountain.	Error in the 3-way valve – Contact service.
1024	System solution needle priming error	Needle and needle hydraulics are not being rinsed with system solution during the preparation phase.	Hydraulic error – Contact service.
1025	Case not closed	Sensor reports open cover during photographing process.	Close lid and continue. Error in sensor – Contact service.

1026	System solution bottle level low	System-solution level is under the minimum.	Too little solution volume in the system-solution container. Fill solution container and continue. System solution container is not in the holder or the sensor cable is not connected at the back of the instrument. Place bottle in holder and/or connect cable and continue. Error in liquid-level detection system – Contact service.
1027	Waste bottle level high	Liquid-level of the waste bottle above maximum.	Empty waste bottle and continue. Sensor cable of the waste bottle is not connected to the back of the instrument. Connect cable and continue. Error in liquid-level detection system - Contact service.
0x800 02091	X shift error	X-movement is not being carried out correctly resulting in a false positioning of the arm (left and right movement).	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the sensor or motor – Contact service.
0x800 02092	Y shift error	Y-movement is not being carried out correctly resulting in a false positioning of the arm (back and forward movement).	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the sensor or motor – Contact service.
0x800 02093	Z shift error	Z-movement is not being carried out correctly resulting in a false positioning of the arm (up and down movement).	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the sensor or motor – Contact service.
0x800 02094	Syringe error	Movement of the syringe pump is not being carried out properly resulting in false positioning of the valve and unreliable sample transfer.	Error in the syringe pump of the system solution hydraulic. Initiate self test. Error in the reference sensor or motor – Contact service.
0x800 02095	Rocking error	Rocking movements are not being carried out correctly resulting in false positioning of the tub holder after the rocking process stops.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the reference sensor or motor – Contact service.

9 Error messages

0x800 02191	Home X timeout	Allowable time for movement in the X-position exceeded. Sensor has no contact.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the reference sensor or motor – Contact service.
0x800 02192	Home Y timeout	Allowable time for movement in the Y-position exceeded. Sensor has no contact.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the reference sensor or motor – Contact service.
0x800 02193	Home Z timeout	Allowable time for movement in the Z-position exceeded. Sensor has no contact.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the reference sensor or motor – Contact service.
0x800 02194	Home syringe timeout	Allowable time for movement of the syringe pump/needle in the reference position exceeded. Sensor has no contact.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the reference sensor or motor – Contact service.
0x800 02195	Home rocking timeout	Allowable time for movement of the rocker in the reference position exceeded. Sensor has no contact.	Movement is possibly blocked. Remove obstacle and initiate self-test. Error in the reference sensor or motor – Contact service.

10   Support

Please contact your local distributor or subsidiary for any support requests.

Our sales representatives are also always at your disposal to provide you with further assistance.