

**SLIDE STAINER
ROBOT STAINER HMS 760X
INSTRUCTION MANUAL**

|

CERTIFICATION

MICROM International GmbH certifies that this instrument has been tested and checked carefully. Its technical data was verified before shipment to be in accordance with the published specifications.

The instrument complies with applicable international safety regulations.

WARRANTY

This MICROM product is warranted against defects in material and workmanship for a period of 1 year. Parts which prove to be defective during the warranty period will be repaired or replaced free of charge by MICROM International GmbH. No other warranty is expressed or implied. Unauthorized modification or repair by third party persons will void the warranty.

The warranty will expire in case of improper or wrong use of the instrument and in case the warning and precautionary messages are not observed. MICROM International GmbH is not liable for any occurring damage.

Errors and omissions excepted. Subject to amendment and improvement without further notice.

This instruction manual will be supplied together with each instrument. Further copies can be ordered at the nearest MICROM sales office by giving the serial number of the instrument, the number of the instruction manual and the date of issue.

This instruction manual is available in the following languages:

	Cat. No.
German:	387742
English:	387743
French:	387744
Spanish:	387745
Italian:	387770

INTENDED USE

Dear Customer,

Before putting the instrument into operation, please read these operating instructions carefully to familiarize yourself with its proper operation and functions.

Only skilled or specially trained personnel must operate the slide stainer, i.e. staining of histological and cytological specimens. The listed and marked safety measures as well as the regulations and hygiene measures of your respective lab must strictly be observed.

MICROM Ser. No. :

Please enter the serial number, which is placed on the type plate on the rear side of the instrument. This way, questions and service can be handled faster.

Instruction Manual No. 387743

Issued on September 28, 2005

MICROM International GmbH
Robert-Bosch-Strasse 49

D-69190 Walldorf

Telefon: (06227) 836-0
Telefax: (06227) 836-111

Intended Use

Table of Contents

EC Certificate of Conformity

Safety precautions

Part 1 Introduction

- 1-1 Description of the Robot Stainer HMS 760X
- 1-2 Technical data Robot Stainer HMS 760X

Part 2 Operating instructions

- 2-1 Setting-up the slide stainer
 - 2-2 Initial turn-on
 - 2-2-1 Turning on and/or off the instrument
 - 2-2-2 Log in
 - 2-3 Basic operational rules
 - 2-3-1 Keyboard
 - 2-3-2 Emergency shutdown
 - 2-4 Creating and deleting a bath layout
 - 2-4-1 Creating a bath layout
 - 2-4-2 Deleting a bath layout
 - 2-4-3 Time uncritical stations
 - 2-4-4 Waste station
 - 2-5 Creating, editing and deleting staining protocols
 - 2-5-1 Creating staining protocols
 - 2-5-2 Editing staining protocols
 - 2-5-3 Deleting staining protocols
 - 2-6 Starting protocols
 - 2-7 Cancellation of protocols
 - 2-8 Data security
 - 2-8-1 Storing and restoring protocols
 - 2-8-2 Storing and restoring bath layouts
 - 2-9 Quality management and documentation
 - 2-10 Settings
 - 2-10-1 User settings
 - 2-10-2 Install update
 - 2-10-3 Service settings
 - 2-11 Accessories
 - 2-11-1 Standard equipment
 - 2-11-2 Additional accessories

Part 3 Theory of operation of the Robot Stainer

- 3-1 Structural design
- 3-2 Operating features
- 3-3 Function

Part 4 Working with the Robot Stainer

- 4-1 Preparations
- 4-2 Staining of specimens
- 4-3 How to avoid malfunctions

Part 5 Maintenance and care

- 5-1 Cleaning and care
- 5-2 Replacement work
 - 5-2-1 Replacing the sponge
 - 5-2-2 Replacing the charcoal filter

Part 6 Error diagnostics and error messages

- 6-1 Error diagnostics

Part 7 Conditions for the transportation of the instrument

- 7-1 Taking back the instrument for repair or routine maintenance
- 7-2 Disposal of the instrument after final shutdown

EC Certificate of Conformity

Name and address of the manufacturer: MICROM International GmbH
Robert-Bosch-Straße 49
D-69190 Walldorf

Product designation: Slide Stainer
Type reference: Robot-Stainer HMS 760X

Notification to Competent Authorities:

These medical device have been registered with the German authority as "General Histology Instruments" under the EDMA-classification code: 23-06-01

The designated product complies with the laid down regulation:

DIRECTIVE 98/79/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 1998 on in vitro diagnostic medical devices

The designated product complies with the EC regulations by strictly observing the following norms:

DIN EN ISO 14971:2001-03

Medical devices - Application of risk management to medical devices (ISO 14971:2000).

DIN EN 61010-1:2002-08

Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements (IEC 61010-1:2001).

DIN EN 61010-2-101:2003-09

Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-101: Particular requirements for In-Vitro-Diagnostic-(IVD)-Medical instruments.

DIN EN 61010-2-081:2002-12

Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes (IEC 61010-2-081:2001).

DIN EN 61010-2-010:1995-03

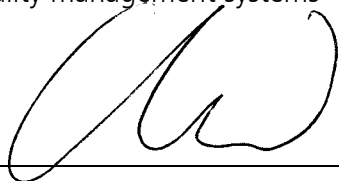
Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-010: Particular requirements for laboratory equipment for the heating of materials (IEC 61010-2-010:1992, modified); German version EN 61010-2-010:1994

DIN EN 61326:2002-03

Electrical equipment for measurement, control and laboratory use - EMC requirements (IEC 61326-1:1997 + A1:1998 + A2:2000); German version EN 61326:1997 + A1:1998 + A2:2001

DIN EN ISO 9001:2000

Quality management systems - Requirements (ISO 9001:2000)



Hans Heid
Managing Director

Walldorf, 10 February 2004

SAFETY PRECAUTIONS

WARNING SIGNALS AND SYMBOLS

The installation and routine use of the Robot Stainer HMS 760X is easy and safe if the instructions in this manual are being observed.



Note:

Special instructions regarding operation of the instrument.



Caution:

Special precautionary measures to prevent damage to equipment. For a long lifetime of the equipment, please observe these instructions carefully.



Danger:

Special warning messages to prevent harm to persons and/or serious damage to equipment. For your own safety, please observe these instructions carefully.



Biohazard:

Warning of biological danger.



Radioactivity:

Warning of radioactive danger.



Separate taking back of electrical and electronic instruments in the countries of the European Union:

This is to be applied in the countries of the European Union and other European countries with a separate collecting system within the waste management.

This product, being an electro and/or electronic instrument, must be treated separately within the waste management process (WEEE).

SAFETY PRECAUTIONS**ATTENTION !**

The operator's safety is affected, when the instrument is not operated in accordance with the instruction manual.

Please observe the following general precautions during operation of this instrument. Failure to comply with these precautions violates safety standards and the intended use of the instrument. MICROM International GmbH is not liable for misuse of the instruments and failure to comply with basic safety requirements.

INSTRUMENT GROUNDING

To avoid injury from electrical current, the instrument must be connected with the safety ground. The instrument is equipped with a three wire ground plug. The power outlet must be connected to the safety ground and must meet the International Electrotechnical Commission (IEC) regulations.

CAUTION: MAINS VOLTAGE

Never remove instrument covers during operation. Component replacements as well as adjustments must only be made by trained service personnel. Only use original spare parts for replacement work. Unplug the unit before removing or opening the covers.

DANGER IN EXPLOSIVE ENVIRONMENT

The instrument must not be operated in the presence of flammable gases. Moreover, the instrument must not be exposed to conditions whereby dangerous gas concentrations can occur.

HAZARD OF RADIOACTIVE RADIATION

When working with radioactive specimens observe all applicable radiation safety procedures. When working with radioactive contaminated material, appropriate safety and disinfection measures must be carried out. According to the rules and regulations concerning the handling of radioactive contaminated material of the respective laboratory, safety clothing (e.g. particle mask, gloves, protective shoe covers) must be worn. Radioactive contaminated waste must be disposed of according to the respective regulations.

HAZARD OF INFECTION



Specimens used during the intended operation of the instrument might potentially be infectious. For this reason, it is recommended to observe the general laboratory regulations concerning protection against danger of infection.

Information on decontamination media, their use, dilution and effective range of application can be read in the Laboratory Biosafety Manual : 1984 of the World Health Organization.

When working with infectious specimens observe all applicable safety procedures. When working with infectious material, appropriate safety and disinfection measures must be carried out. According to the rules and regulations concerning the handling of infectious material of the respective laboratory, safety clothing (e.g. particle mask, gloves, protective shoe covers) must be worn. Infectious waste must be disposed of according to the respective regulations.

CAUTION! DANGER BY MOVING PARTS

Do not manipulate at the unit when the hood is open. To avoid danger, the moving speed is reduced.

CONSERVATION

According to environmental regulations, the occurring waste water should be drained into a discharge channel with subsequent biological/chemical purification.

HAZARD OF MALFUNCTION

To avoid the hazard of malfunction of an instrument, it must only be operated in a controlled electromagnetic environment. This means, that transmitters such as mobile phones must not be operated in their close vicinity.

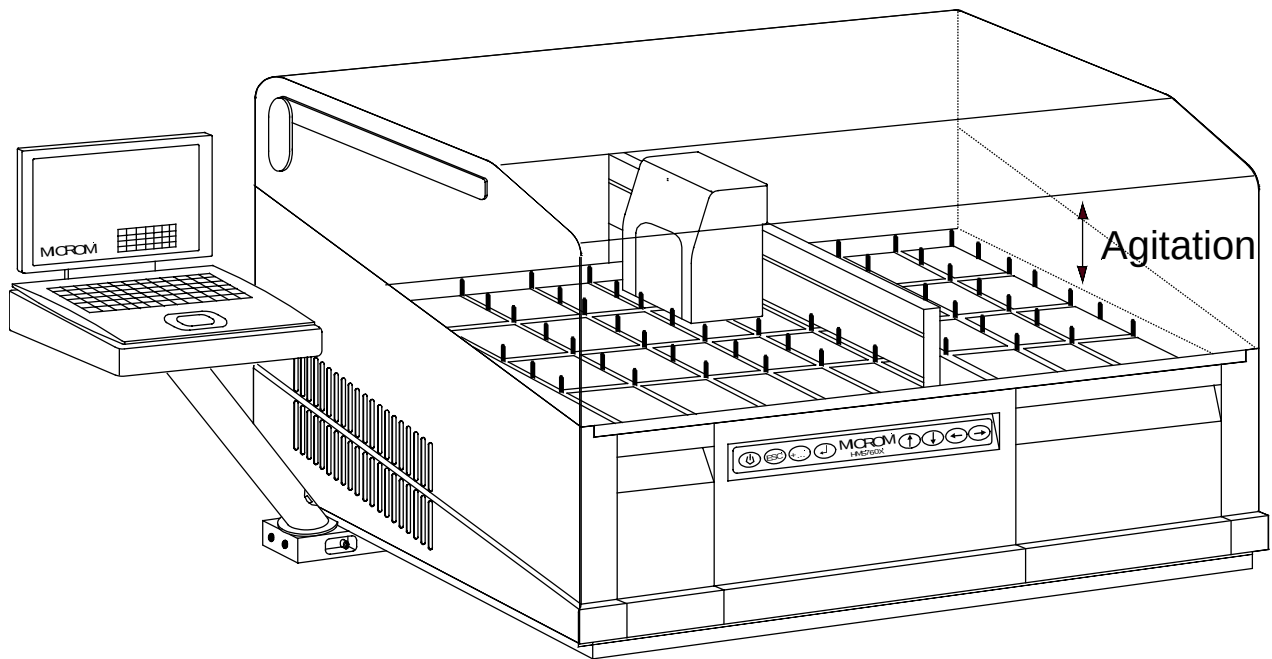


Fig. 1

PART 1 INTRODUCTION

1-1 DESCRIPTION ROBOT STAINER HMS 760X

The Robot-Stainer HMS 760X from MICROM International GmbH is an efficient staining machine for histological and cytological stainings and sets new standards in ergonomics, operation and comfort.

The Robot-Stainer HMS 760X is available in two different basic versions:

- Robot-Stainer HMS 760X, equipped with drying stations (standard version)
- Robot-Stainer HMS 760X, equipped with Aqua-Dest connection (optional).

The instrument consists of a metal frame with x/y arrangement of the bath containers, 31 reagent containers, 27 reagent stations, 2 DI water stations with pressure-controlled connection or 2 drying stations with hot air inflow, that can be set up to +70°C. Moreover, the HMS 760X has 3 rinsing stations with pressure-controlled water connection, 1 loading drawer and 3 output drawers. Each bath container with individual covers which are automatically lifted and transferred during protocol execution.

Bath size for 2 slide baskets with 30 slides each, bath capacity: 650 ml, permanent agitation of slide baskets.

Simultaneous multiple protocol execution with several protocols by freely selectable robotic arm control with x/y/z-axes. During transfer of slide carriers, the individual bath covers are manipulated accordingly.

Reduced reagent carry-over by new drip preventer and innovative drip processing.

Silent moving mechanics.

Protocol execution by simple to operate touchpad keyboard via eight buttons with minimal key sequence, display of protocol on notebook, acoustic signals at protocol end and in case of protocol error.

Input of staining protocols via the keyboard of the notebook. Protocol set-up by menu-driven prompting in various languages.

Up to 50 different protocols with up to 100 protocol steps each can be stored, immersion time from 1 sec. - 9999 min. 59 sec. (= 165,56 h and 59 sec.) in steps of seconds.

Acrylic glass cover to swing open, vapor escape via downwards ventilation flow.

Exhaust via active carbon filter, which is easily accessible.

1 - 2

TECHNICAL DATA ROBOT STAINER HMS 760X

Slide capacity: 2 x 30 slides

Bath capacity: 650 ml

Protocols: 50 with multiple protocol execution with continuous loading

Protocol steps: more than 100 steps

Immersion time: 1 sec. – 9999 min. (= 165,56 h and 59 sec.) in steps of seconds

Transportation & storage conditions

Storage

temperature range: -20°C up to +50°C

Water pressure: between 2.5 and 4 bar

DI water pressure: between 0.2 and 4 bar

Operating conditions: +5°C up to +40°C (at a max. rel. humidity of 60%)
 altitude up to 2000 m M.S.L.
 for indoor use only

Power requirements:

Basic instrument with DI water Stations: 100 - 240 V 5 A +/-10% 50...60 Hz

Basic instrument with drying stations: 100 - 240 V 5 A +/-10% 50...60 Hz

Internal protection

Secondary circuit: 1 x 24 VDC/T6.3AH, 1 x 48 VDC/T8.0AH

Primary circuit: 2 x T6.3AH

Pollution degree: 2

Overvoltage category: II

Acoustic pressure: 47 dBA

Dimensions: 1127 mm + 400 mm for notebook, 600 mm, 765 mm (w/h/d)

Weight: 140 kg

2 OPERATING INSTRUCTIONS

2-1 SETTING-UP THE SLIDE STAINER

Unpacking the instrument:

- Loosen and remove the tightening straps.
- Remove the wooden top (fig. 2.11) of the packing.
- Remove the reagent containers, the accessories as well as the packaging inserts (fig. 2.8 and 2.9).
- Remove the foam parts (fig. 2.2).
- Lift the case (fig. 2.6) over the instrument. The instrument is placed on a pallet (fig. 2.1).
- Slightly tilt the slide stainer (fig. 2.4) on the handles and remove the lower foam parts (fig. 2.2, 2.3 and 2.5).
- Carry the instrument to the site of installation and place it on an even surface.
- Dismount the carrying handles
- Unpack the reagent containers as well as the covers and the accessories.
- Unpack notebook and arm for notebook.
- Carefully keep the shipping container and the carrying handles for possible return shipments.



Note:

Before the initial set up of the slide stainer, first remove the transportation protection of the robotic arm.

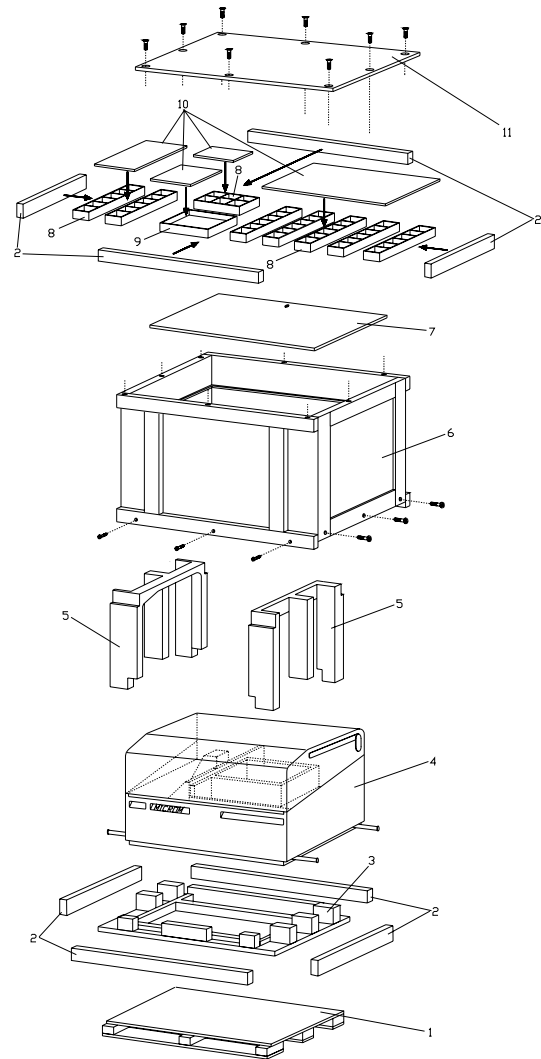


Fig. 2

Choose installation site that

- the instrument can be connected to water supply and drain.
- the distance between wall and rear panel is approx. 10 - 15 cm.
- the water drain has a constant declination, i.e. the entrance port into the drain system must be located below the outlet on the instrument.
- the mains switch for separating the instrument from the power supply is accessible any time.



Caution:

It is urgently required that the **water installation** be performed by a **skilled person**. MICROM International GmbH is not liable for the connections between water supply and instrument. For safety reasons, an aquastop device, as it is used for household instruments, should be installed in addition.

Enclosed drain hose: inner Ø 19 mm,
length: 2,5 m



Caution:

The connection to the drain must not exceed 2,5 m.

Install the attached hose equipment for the water feed as well as for DI water as follows:

- Connect the feed hose for the rinsing stations (fig. 3.4) and/or DI water stations (fig. 3.2) on the instrument and on the faucet.
- Connect the drain hose on the instrument's connection piece (fig. 3.5) and on the drain connection.



Note:

For the version **HMS 760X with DI water**, the water pressure can be set via the pressure controller (fig. 3.1).

The water pressure for the rinsing stations can be set via the pressure controller (fig. 3.3).

For the version **HMS 760X with drying stations**, the water pressure for the rinsing stations is set via the pressure controller (fig. 3.3).

However, the flow rate of the water must not be so high that the specimens are removed from the slides.

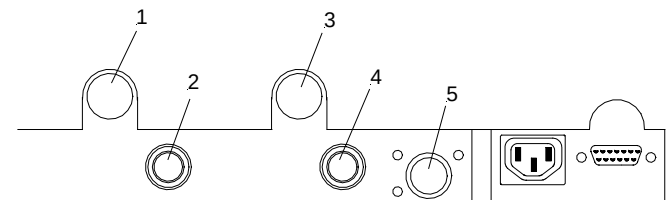


Fig. 3

2-2 INITIAL TURN-ON



Note:

The kind of the used examination materials and all special conditions for their processing, pre-treatment and, if necessary, storage as well as instrument controls for correct and safe operation is in the responsibility of the operator. The operator is also responsible for special equipment and materials and/or reagents for the operation of the instrument.

Installing the connecting cables and the power line:

- Install arm for notebook, which is already equipped with the power line for the entire instrument, either on the right or left side of the slide stainer. For this, tighten the screws (fig. 4.1)
- Then connect the 9-lead D-SUB plug connector (data transfer) with the intended connection (fig. 5.1). Tighten the side knurled screws on this plug connector.
- Realize the power supply of the notebook via the side connection (fig. 5.2).
- Insert the connection on the notebook.
- Plug the mains plug in the notebook.
- Connect the power line (fig. 5.3) for the entire instrument and insert it in a socket.

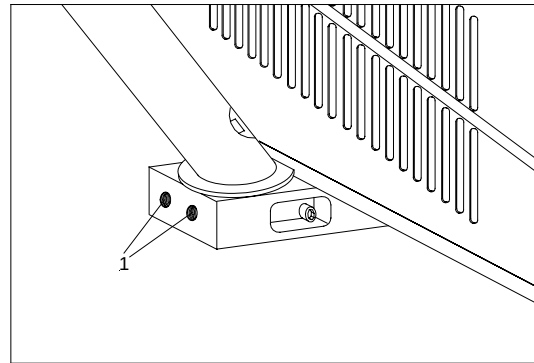


Fig. 4

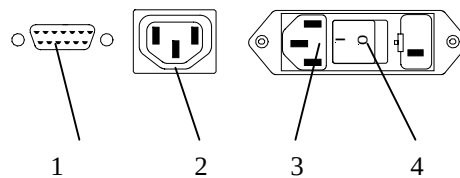


Fig. 5

Pins:

- Insert the sensing pins (35 mm) into the respective holes of the loading and output drawers.
- Insert the agitation pins (60 mm) into the corresponding holes beside the reagent baths.

Covers:

- Place the covers onto all stations.
- Place two covers onto station 29.



Note:

Two covers must be placed on station 29, as one cover is always carried by the transportation arm to reduce transportation times.

Sponges:

- Insert the attached sponge into the collecting tray on the horizontally placed cover manipulator.

Filling the reagent containers with reagents:

- Before starting the staining process, fill the containers, according to the pre-defined bath plan, with the corresponding reagents.
- Fill the containers to the marking. This way, optimal results are achieved during the individual staining steps.
- Moreover, when creating a bath layout, a limit how often a reagent is allowed to be used, can be stored (see part 2-4)



Note:

As described in part 1-2, Technical Data, no explosive gas concentrations can occur when using reagents which are usually applied for staining programs.

2-2-1 TURNING ON AND/OR OFF THE INSTRUMENT

Turning on:

- First, turn on the power switch (fig. 6.1) on the left side of the instrument.



Note:

This power switch can be turned on, even if the instrument is shut down.

The instrument is then in the standby mode and can be started again via the start button (fig. 7) of the notebook.

- Turn on the notebook via the start button (fig. 7) to start the instrument.

After the loading process (approx. 20 sec.) is finished, an initialization phase of the individual axes (X, Y, Z) is carried out. This process is shown on the screen of the notebook. The instrument is now ready for operation.



Caution:

Please note to insert the basket carrier in a correct way. It should be aligned that the two overhanging brackets show to the left side. This way, the instrument automatically detects when a basket is inserted by pressing the sensor pin.

Turning off:



Caution:

To turn off the instrument, the software must be shut down as it must be done with each computer.

- This is done via the green button (fig. 8.1) or via the shut-down menu of the software.
- The software is shut down and the notebook turns off automatically.
- For a restart, press the start button (fig. 7) of the notebook.

Turning on: Activate the start button (fig. 7) on the notebook.

Turning off: Activate the green button (fig. 8.1) on the touchpad keyboard.

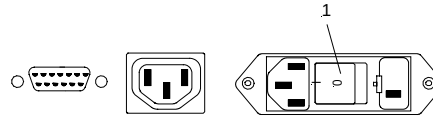


Fig. 6

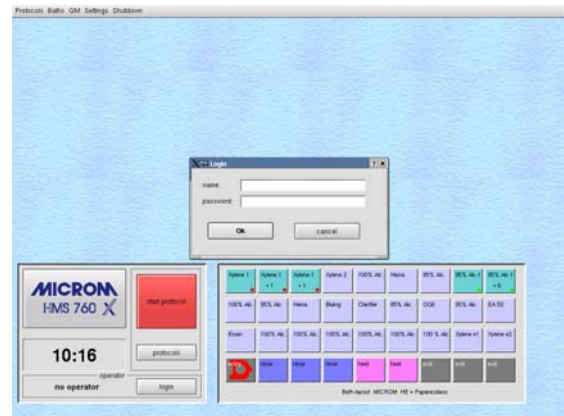


Fig. 7

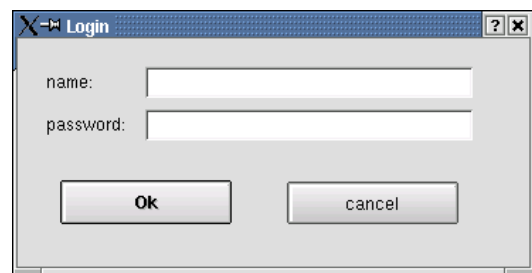


2-2-2 LOG IN

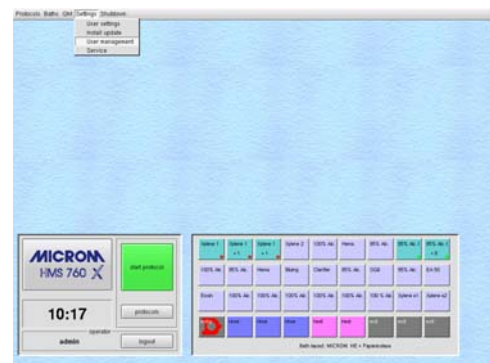
The slide stainer HMS 760X has a user-defined password inquiry with three different user levels. When turning on the instrument and the notebook, a dialog field with the password inquiry becomes visible.



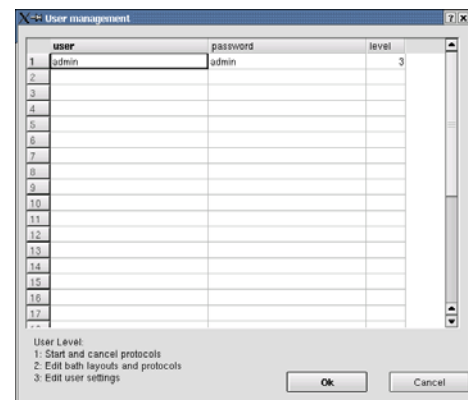
For an initial turn on, the word "admin" must be typed into the line "name". Also type "admin" into the password line.



In case an alteration of the user name and the password "admin" is to be carried out, please do so in the menu Settings – User Management.



For this, a table is opened. Here user names and corresponding passwords can be entered. The user name must include at least one letter or one figure. A password can be entered, however, it is not compulsory.



A defined user lever can be assigned to each user in the last column.

Three different user levels are available.

Level 1: User is allowed to start and interrupt protocols only.

Level 2: User is allowed to create protocols and bath layouts.

Level 3: User is allowed to carry out all settings.

Users can be deleted from a table. For this, mark the line with the concerned user on the left side of the table. Confirm the process in the occurring dialog field.

Important! One user with user level 3 must be logged-in, at least. In case, no level has been assigned to a user, the lowest level (level 1) will be assigned automatically.

Each user can log-in and quit the instrument via his password (see dialog field below the indication of the time).



2-3 BASIC OPERATIONAL RULES

2-3-1 KEYBOARD



Caution:

To avoid damage to the instrument, do not place objects (e.g. slide baskets) on top of the hood of the Robot-Stainer.

The menu structure of the Robot-Stainer HMS 760X is clear and easily understandable.

The operator of the Robot-Stainer HMS 760X is prompted by the menu in many cases. Requests, questions and messages are shown on the screen, which will lead the operator through the programm sequences.

Then the opposite **main screen** (fig. 8) appears. The bath layout is shown as follows: Looking from the front, the first line starts in the left rear part with bath no. 1 up to 9, second line with 10 up to 18 and the third line 19 up to 27.



Caution:

Before the daily initial turn-on, briefly remove all the lids and wipe off the condensation water on the bottom or let it drop off.

For **daily routine operations** the following touchpad keys can be used:

Touchpad keys:

green button = ON/OFF

ESC = end/cancellation

+... = menu button

↵ = acknowledge selection (enter/OK)

↑ = UP button/scroll upwards

↓ = DOWN button/scroll downwards

← = arrow button/selection to the left side

→ = arrow button/selection to the right side

- To create, edit or store a staining protocol, the notebook can be used.
- For the acknowledgement of entries, use the **ENTER** button on the notebook keyboard or on the touchpad keys.
- The arrow buttons can now be used to go to the different input fields.
- The slides in the basket are hung up in the basket carrier into the loading drawer. The staining sequence is carried out according to a protocol, which has been entered before.

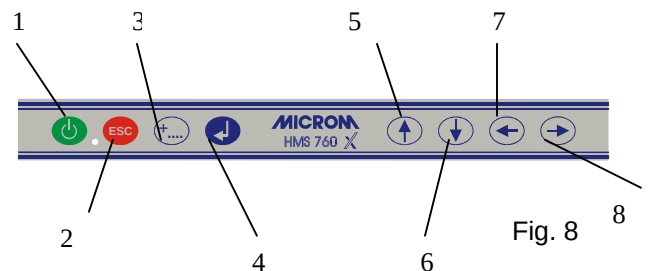
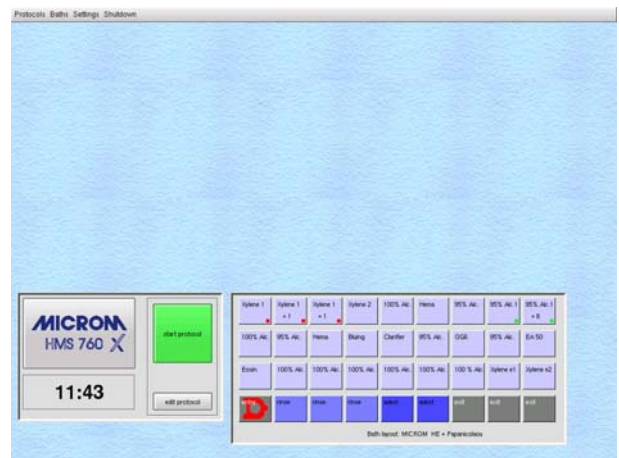


Fig. 8

- After the completion, the basket carrier is allocated to one of the three output stations. The first of the three output stations on the left side, which is internally known as station 34, has top priority. If this station is occupied, the next one (station 35) is selected. If this one is also occupied, the slide basket is placed into station 36.
- In case, all output stations are occupied, this is indicated via an acoustic warning signal. This acoustic message can be acknowledged by pressing the "ENTER" button on the touchpad panel.
- Moreover, the error message "EXIT OCCUPIED" is shown on the screen.



Caution:

Remove one of the three basket carriers from the output station. The specimens which have been finished, are waiting. The others are still being transported. For the "waiting" baskets, the exceeding of the flexible times is shown in red.

- Press the "Enter" button on the touchpad panel to acknowledge this message.
- Then the stainer finishes the actual staining protocol and the basket carrier is moved into the vacant output station.
- Now the basket carrier can be removed by pulling out the output drawer.



Note:

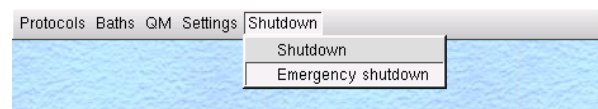
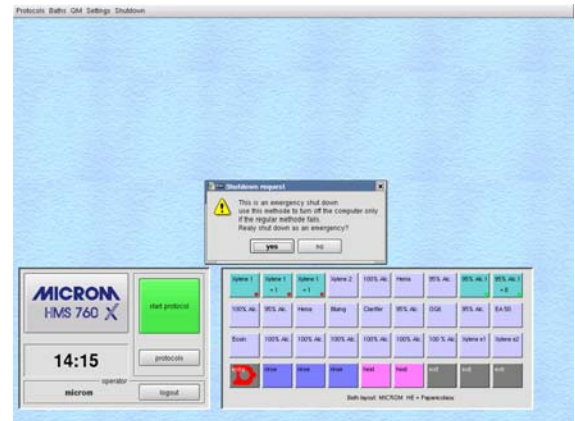
After having removed a processed specimen basket from the output station, please make sure that a cover is placed onto the output station again. This is necessary to guarantee trouble-free operations.

2-3-2 EMERGENCY SHUTDOWN

If it is not possible anymore to run down the computer in a controlled way due to a PC or software problem, the emergency shutdown can be activated. Here it is possible to run down or shut off the software in an emergency without destroying or losing necessary data.


Caution:

Please only use the emergency shutdown, if the the instrument cannot be turned off in a controlled way!



2-4 CREATING AND DELETING A BATH LAYOUT

2-4-1 CREATING A BATH LAYOUT

Before creating a protocol, the contents of the bath containers must be defined and a bath layout must be created.

- To get into the menu bar, press the menu button or use the mouse.
- Via the left or right buttons select the menu point **"BATHS"** and acknowledge with ENTER.
- Via the UP or DOWN button or via the mouse now select **"EDIT BATH LAYOUT"**.
- Acknowledge the selected option with ENTER.

Depending on the option, a bath layout appears on the screen. Via the option "new" or "load", it can be selected whether a new bath layout should be created or whether an existing one should be loaded for modification.

- Select the desired option via arrow button or via mouse and acknowledge with ENTER.

Entries that can be made for each station:

Bath no.: is already entered and cannot be altered.

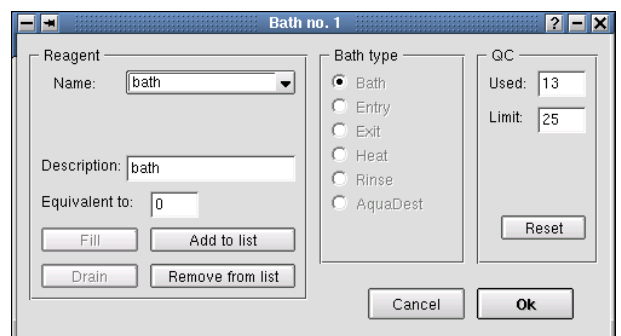
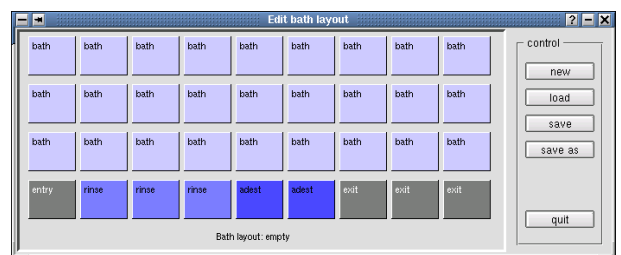
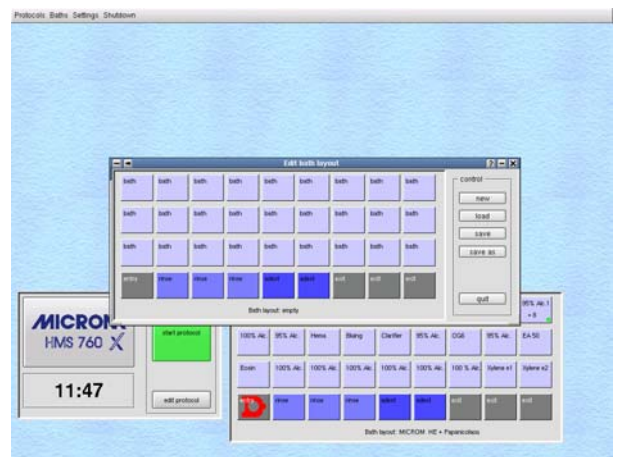
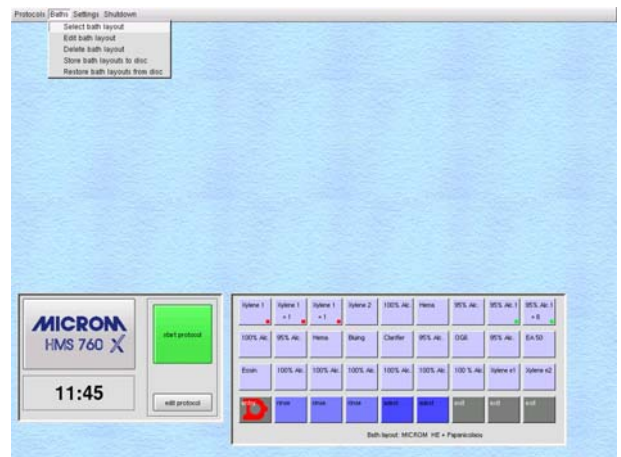
Type: the kind of station appears already automatically.

Name: enter the bath name. For easy programming, it can be added into a reagent list and can be called up when needed. For this, click with the mouse to "Add to list". In case a name should be deleted simply click with the mouse to "Remove from list".

Description: enter the bath description (e.g. date of loading, comments, protocol belongings, etc.).

Equivalent to: means that equivalents can be entered here. 0 means that there is no equivalent. Equivalent baths are later marked in the bath layout with a symbol of the same color as well as a number which refers to equivalent baths.

USED: here it is shown how often the bath has been used.



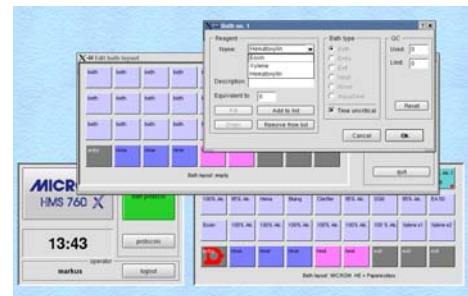
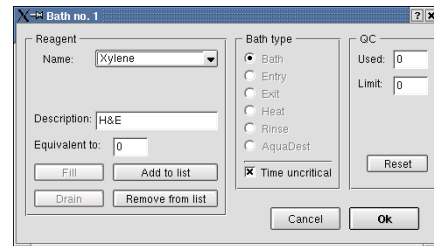
LIMIT: is used for quality control of the reagents. Here it can be entered how often the bath is allowed to be used. When 90% of the limit has been reached, a yellow frame is shown around the bath on the screen. For 100 % a red frame appears and for 110% this frame starts to blink. To reset this number to "0", which is shown under USED, click RESET.

Time uncritical: To guarantee an optimal and efficient working with the instrument, the first step in a staining protocol can be an uncritical one.

Reagent list: To simplify the programming of bath layouts, a list of reagents can be created. The reagent name can be entered under Name and can be stored via "Add to list". For future programmings the name can easily be selected from the list.

Reagent names and descriptions can also be deleted from a list. For this, please mark the names, which are to be deleted, and then delete them via the field "Remove from list".

- When the entry for all stations has been completed, save the bath layout with "SAVE" or "SAVE AS".



2-4-2 DELETING A BATH LAYOUT

In case a bath layout is no longer used, it can be deleted.

- To get into the menu bar, press the menu button or use the mouse.
- Via the left or right buttons select the menu point "**BATHS**" and acknowledge with ENTER.
- Via the UP or DOWN button or via the mouse now select "**DELETE BATH LAYOUT**".
- Mark the respective bath layouts to delete them.
- Acknowledge the selected option with ENTER.

2-4-3 TIME UNCRITICAL STATIONS

To guarantee a more efficient loading of the instrument with slides, "time uncritical baths" can be defined. A very fast loading of the baskets into the slide stainer is thus ensured.

After having started a protocol, the baskets are immediately transported into the time uncritical baths.

Time uncritical baths can **only** be defined for the first step of a protocol. For all other stations, flexible times must be defined as described in "Creating staining protocols".

When creating a protocol, a minimum immersion time can be defined for each time uncritical bath to use these baths as a first step in a protocol.

Time uncritical stations are defined when creating a bath layout. In the bath layout screen they are shown in different colours compared with the other reagent stations.



2-4-4 WASTE STATION

The HMS 760X has an automatic drip preventing system to minimize the carryover of reagents. Surplus reagent is absorbed by a sponge and collected in an integrated container which is automatically emptied into the rinsing stations at regular intervals.

If the collected reagent should not be disposed of via the rinsing station, a bath station can be programmed as a waste station for separate disposal.

Then, the collected reagent liquid is not emptied into the rinsing station, however, it is emptied into the programmed bath container.

This bath container can be removed once a day to dispose of the contents appropriately and according to the regulations of the respective lab.



Note:

Stations 10 to 17 and 19 to 26 can be defined as waste stations.

Programming a waste station:

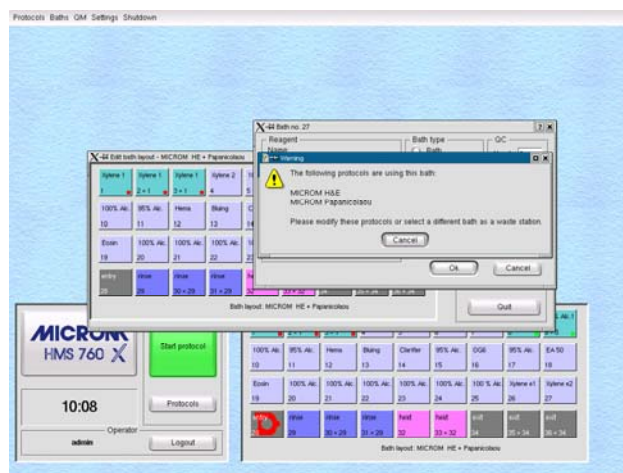
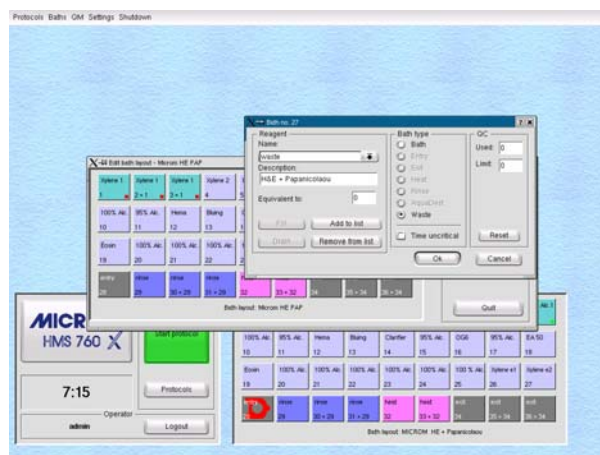
A waste station can be selected within the bath layout.

- For this, open the menu "Baths" under "Edit bath layout".
- Select any bath within the bath layout.
- Click on "Waste" under "Bath type".
- After having confirmed it via "OK", the respective station is shown in the bath layout in brown color and with the description "Waste"



Note:

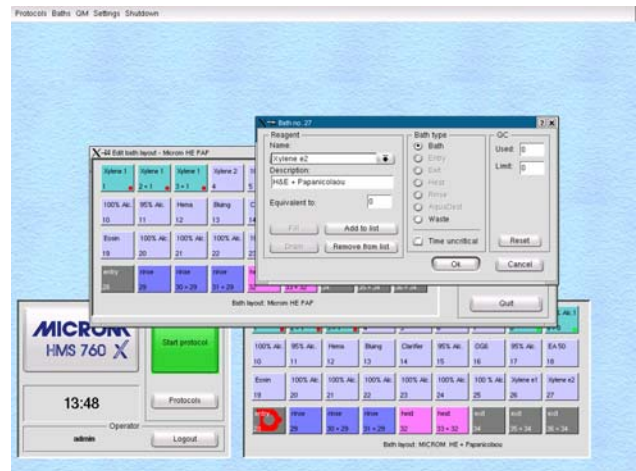
In case a waste station is to be integrated into an already existing bath layout, please note that the corresponding protocols are adjusted accordingly, if necessary.



Deleting a waste station:

A waste station can be deleted within the bath layout.

- For this, open the menu "Baths" under "Edit bath layout".
- Now select the waste station within the bath layout.
- Click on "Bath" under "Bath type".
- This station can now be provided with a reagent name, as usual.
- Confirm with "OK" to use the waste station again as a reagent bath.
- If a new waste station is not programmed, the collected reagent will then be disposed of via the rinsing stations.



2-5 CREATING, EDITING AND DELETING STAINING PROTOCOLS

2-5-1 CREATING STAINING PROTOCOLS

Staining protocols are entered via the notebook keyboard. Two staining programs are already installed on your Robot-Stainer HMS 760X. Each created protocol receives a file name.

Creating a new protocol:

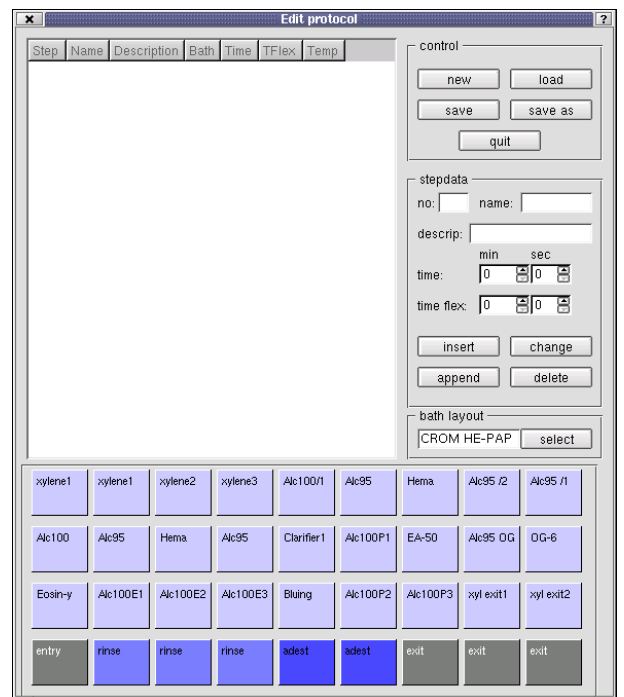
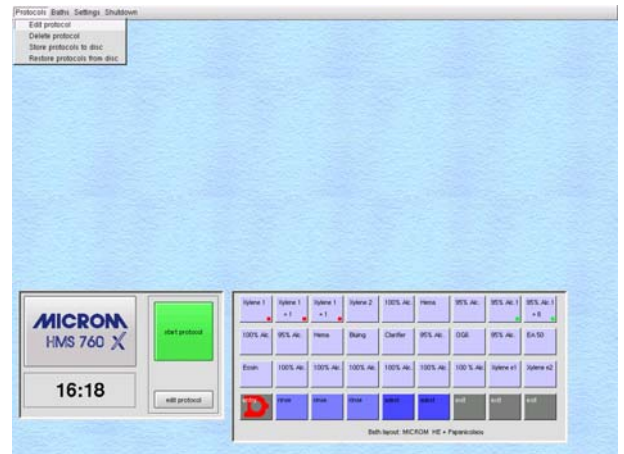
- Turn on the instrument.
- Press the menu button to get into the menu bar.
- Via the left or right button select "**PROTOCOL**" and acknowledge with ENTER.
- Via the UP or DOWN button now select "**EDIT PROTOCOL**" and acknowledge with ENTER.
- As an option, the field "**EDIT PROTOCOL**" beside the bath layout can be selected via the mouse.
- The protocol screen is now shown.
- Click "**NEW**" and acknowledge with ENTER. Also here, via "LOAD" a selected protocol can be loaded and altered. With "NEW" a completely new protocol can be processed.
- The following entries must be made for a new protocol in the field "Stepdata":
Step: The corresponding step is chosen by selecting the respective bath in the bath layout.
Name: The name of the selected bath for this step is shown here.
Time: Time in minutes and seconds can be entered here.
Time flex: The time a slide basket can remain in a station in addition to the above-mentioned time can be entered here ensuring a flexible operating process. These times should be chosen as long as possible.
- After having created a protocol, click "**SAVE AS**".
- Enter a protocol name and acknowledge with ENTER.



Note:

A certain bath layout can be assigned to a protocol.

- In the field "**BATH LAYOUT**" choose "**SELECT**".
- Select a bath layout and acknowledge with ENTER.



2-5-2 EDITING STAINING PROTOCOLS

Editing an existing protocol:

- Press the menu button to get into the menu bar.
- Via the left or right button select "**PROTOCOL**" and acknowledge with ENTER.
- Via the UP or DOWN button now select "**EDIT PROTOCOL**" and acknowledge with ENTER.
- As an option, the field "**EDIT PROTOCOL**" beside the bath layout can be selected via the mouse.
- The protocol screen is now shown.
- Click "**LOAD**" and acknowledge with ENTER.

A list of already existing protocols is shown on the screen:

- Via the arrow buttons or mouseclick, choose the desired protocol and acknowledge with ENTER.
- Via the field "Stepdata", alterations can be made.

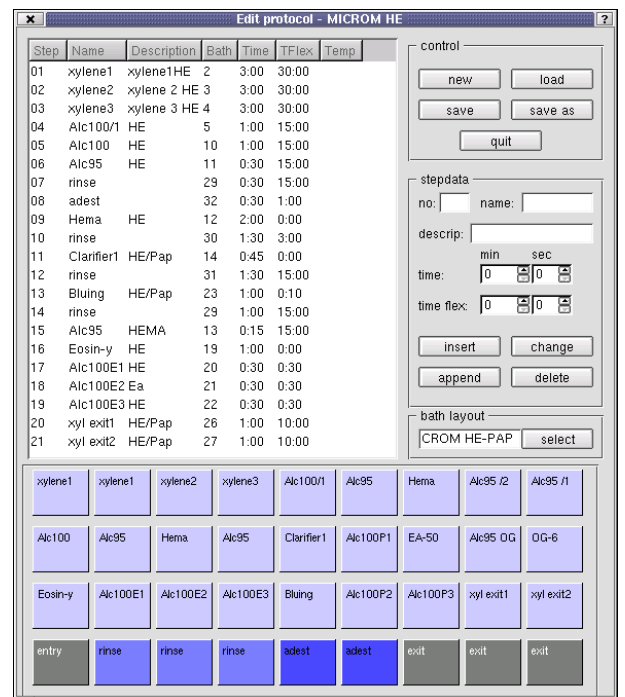
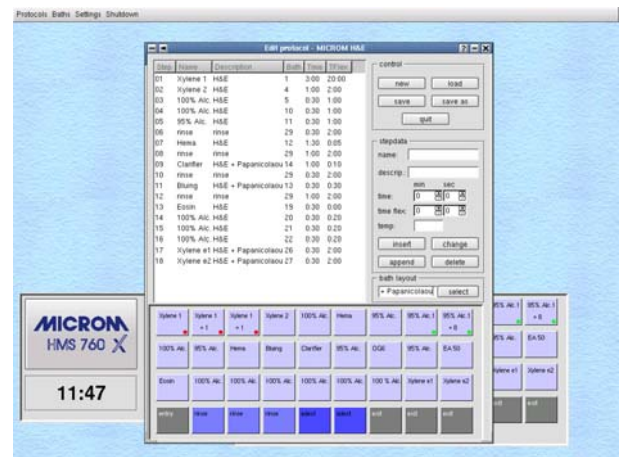
In case a step is to be added, this step is placed before the selected one. After having entered it, acknowledge with "**INSERT**".

In case an already existing parameter is to be altered in a step, it must be acknowledged with "**CHANGE**".

In case a step is to be deleted, it must be marked via the arrow buttons and acknowledged with "**DELETE**".

In case a step is attached to a protocol, it must be acknowledged with "**APPEND**".

- When all changes are entered, click to "**SAVE AS**" and enter a new protocol name.
- Acknowledge with ENTER.



2-5-3 DELETING STAINING PROTOCOLS

To delete staining protocols which are no longer used, please proceed as follows:

- Press the menu button to get into the menu bar.
- Choose "PROTOCOL" and acknowledge with "ENTER".
- Via the UP or DOWN button or via mouseclick select "DELETE PROTOCOL".
- Select the protocols which should be deleted via the up and down buttons and acknowledge with "ENTER".

2-6 STARTING PROTOCOLS

- Insert the basket. Please note to insert it in a correct way.
- It should be aligned that the two overhanging brackets show to the left side. This way, the instrument automatically detects when a basket is inserted by pressing the sensor pin.

A staining protocol can be started via the ENTER button on the touchpad keyboard or by mouseclick on the field "Start Protocol".



Caution:

Before starting a protocol, please always close the hood!

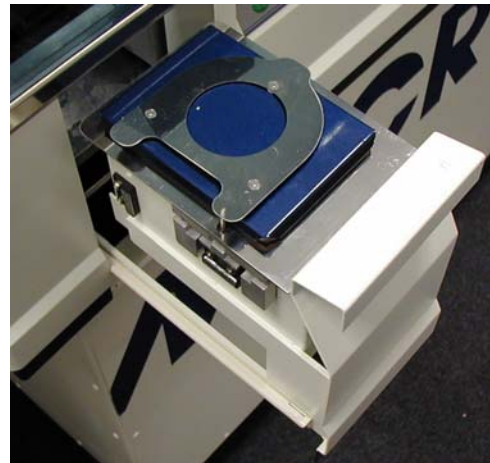


Fig. 9

- Then open the input drawer and remove the cover from the station. Insert a basket carrier with up to two baskets. Close the drawer.



Caution:

Please note to insert the basket carrier in a correct way. It should be aligned that the two overhanging brackets show to the left side. This way, the instrument automatically detects when a basket is inserted by pressing the sensor pin.

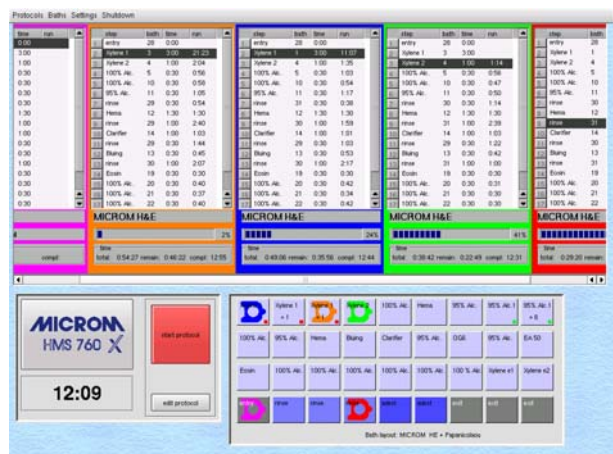
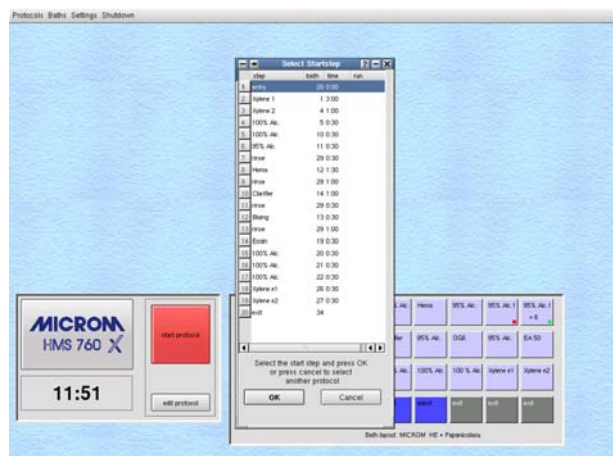
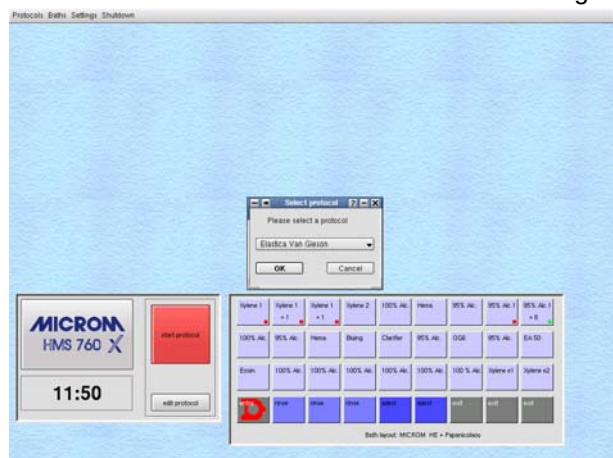
- Actuate the field "**Start Protocol**" on the main screen via the ENTER button or mouseclick.
- Now "**Please select a protocol**" is shown on the screen. Via the UP and DOWN buttons the desired protocol can be selected.
- Acknowledge the selected protocol with ENTER.
- Afterwards, this protocols appears on the screen. Again acknowledge with ENTER to start the protocol.

The selected protocol is now processed.



Note:

If the drying stations are used within the first 5 min., a time delay must be taken into consideration.



2-7 CANCELLATION OF PROTOCOLS

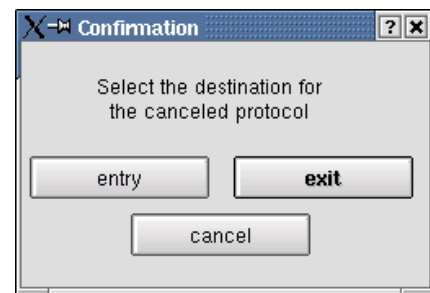
Protocols can be cancelled at any time.

- Press the ESC button.
- A cancellation window opens up on the screen (grey background).
- Select the protocol which is to be cancelled via left/right arrow button.
- The basket which is to be taken off, can be transported either to the input or output station (If the start position is not occupied).
- Default setting is the output station.
- Use the left/right arrow button to select alternatively the input station.
- Acknowledge with ENTER.
- Acknowledge the following safety request again with ENTER.
- The respective baskets are transported to the output and/or input drawers for removal and the protocols are cancelled.



Note:

A cancellation can only be performed when all moving axes have come to a standstill.



2-8 DATA SECURITY

Before storing protocols and bath layouts to discs and restoring them from there again, the external disc drive must be connected to the notebook:

- Insert the USB plug of the external disc drive into the corresponding port on the right side of the notebook.
- The external disc drive is now ready for operation.

2-8-1 STORING AND RESTORING OF PROTOCOLS

Storing protocols to disc:

- Select **"PROTOCOLS"** via mouse in the main menu.
- Then select the sub-menu **"STORE PROTOCOLS TO DISC"**.
- Insert a disc into the floppy drive according to the following message **"PUT A FLOPPY DISC TO THE FLOPPY DRIVE"**.



Caution:

Before protocols are stored to a disc, the following warning message is shown: **"PROTOCOLS WITH EQUAL**

NAMES WILL BE OVERWRITTEN ON FLOPPY DISC".

- The message can be acknowledged with **"OK"** oder cancelled via **"CANCEL"**.
- When all dates are stored to the disc, the following message appears on the screen: **"BACKUP TO FLOPPY DISC COMPLETED"**.

Restoring protocols from disc:

- Select **"PROTOCOLS"** in the main menu via the mouse.
- Then select the sub-menu **"RESTORE PROTOCOLS FROM DISC"**.
- Insert a disc into the floppy drive according to the following message: **"PUT A FLOPPY DISC TO THE FLOPPY DRIVE"**.



Caution:

Before protocols are restored from disc, the following warning message appears on the screen: **"PROTOCOLS WITH**

EQUAL NAMES WILL BE OVERWRITTEN".

- This message can be acknowledged with **"OK"** or cancelled with **"CANCEL"** .
- When all dates are restored from the disc, the following message appears on the screen: **"RESTORE FROM FLOPPY DISC COMPLETED"**.

2-8-2 STORING AND RESTORING OF BATH LAYOUTS

Storing bath layouts to disc:

- Select "**BAD LAYOUTS**" in the main menu via the mouse.
- The select the sub-menu "**STORE BATH LAYOUTS TO DISC**".
- Insert a disc into the floppy drive according to the message: "**PUT A FLOPPY DISC TO THE FLOPPY DRIVE**".



Caution:

Before bath layouts are stored to a disc, a warning message is shown on the screen: "**BATH LAYOUTS WITH**

EQUAL NAMES WILL BE OVERWRITTEN ON FLOPPY DISC".

- This message can be acknowledged with "**OK**" or cancelled with "**CANCEL**".
- When all dates are stored on the disc, the following message appears on the screen: "**BACKUP TO FLOPPY DISC COMPLETED**".

Restoring bath layouts from the disc:

- Select "**BATH LAYOUTS**" in the main menu with the mouse.
- The select the sub-menu "**RESTORE BATH LAYOUTS FROM DISC**".
- Insert a disc into the floppy drive according to the following message: "**PUT A FLOPPY DISC TO THE FLOPPY DRIVE**".



Caution:

Before the bath layouts are stored from the disc, the following warning message is shown on the screen: "**BATH**

LAYOUTS WITH EQUAL NAMES WILL BE OVERWRITTEN".

- This message can be acknowledged with "**OK**" or cancelled with "**CANCEL**".
- When all dates are restored from the disc, the following message is shown on the screen: "**RESTORE FROM FLOPPY DISC COMPLETED**".

2-9 QUALITY MANAGEMENT AND DOCUMENTATION

Each created and processed protocol is stored in a quality management report (QM report) after having removed the basket from the output station.

The following parameters are shown in a list:

- name of the protocol
- Name of the person, who was currently logged in when the protocol was started
- date
- start time
- exact transportation times
- exact immersion times in the baths
- bath status (how often was a bath used)
- error messages



Note:

A QM report is deleted after 30 days without further queries in advance.

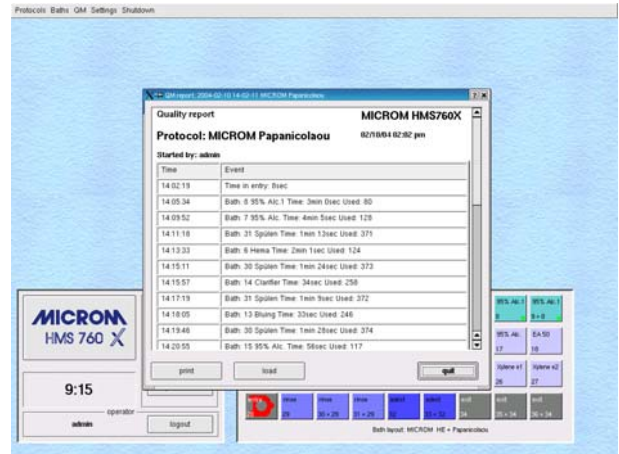
QM reports can be displayed, deleted or printed.

Display QM reports:

- Click on "QM" in the menu bar.
- Click on "View QM reports" and select the corresponding QM report and confirm with Enter.
- The selected QM report is shown on the screen.

Delete QM reports:

- Click on "QM" in the menu bar.
- Click on "Delete QM reports".
- Select the QM reports which are to be deleted and confirm with Enter.
- These QM reports will now be deleted from the fixed disk.



Print QM reports:

- Put a disk into the disk drive of the notebook.
- Click on "QM" in the menu bar.
- Click on "Print QM reports" and select the reports which are to be printed.
- Now click on the button "Print".
- The selected reports are then stored onto the disk as pdf-files.
- The pdf-files from the disk can be transferred onto a PC and can be printed or filed.
- System supposition: The Adobe Acrobat Reader must be installed.

2-10 SETTINGS

2-10-1 USER SETTINGS



Note:

User settings can only be carried out when no protocol is running.

Different specific settings can be carried out in the USER SETTINGS:

- Language selection
 - Operation mode
 - Sound on/off
 - Shake function
 - Temperature setting of drying station
 - Real time
 - Change pad
- For this, select via menu button (fig. 8.3) of the touchpad keyboard or via the mouse pad "SETTINGS" in the menu bar.
 - Via the Up/Down buttons (fig. 8.5 and 8.6) of the touchpad keyboard select "USER SETTINGS".
 - Confirm via the Enter button.
 - The window with the user settings opens.

Language selection:

The desired language can be selected here. Four different languages are available: Deutsch, English, Français und Español.

- Select the desired language via mouse pad.

Operation mode:

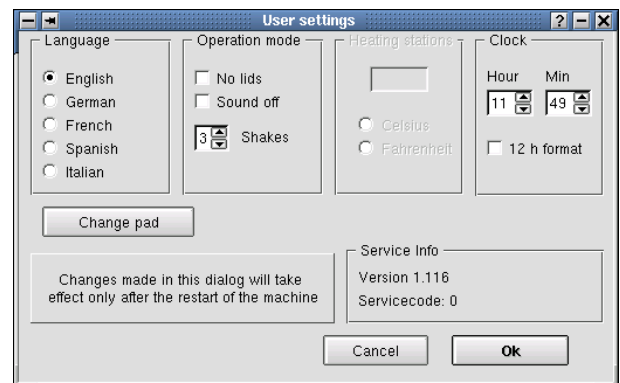
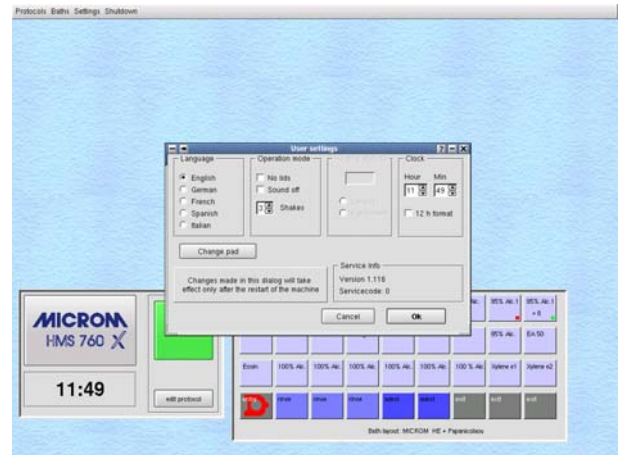
You can select here whether the instrument is to be operated with or without lids.

- Via mousepad click the desired operation mode.



Caution:

If the operation mode "without lid" is chosen, please note that all lids are removed from the instrument!!



Sound on/off:

Here, any acoustic messages can be turned on or off.

- Select the desired setting via mousepad.

Setting of the shake function:

To minimize the reagent carryover, shake processes from 0 – 5 can be select. After lifting a basket carrier out of the reagent bath, superfluous reagent can be shaken off.

- Enter the desired setting via mousepad.
- 0 = no shake function, 5 = 5 shake movements.

Temperature setting of the drying station:

The temperature of the drying station can be pre-selected from ambient temperature to max. +70°C.

- Enter the desired setting via mousepad.
- You can choose between Celsius and Fahrenheit.

Real time (clock):

Your real time can be set here.

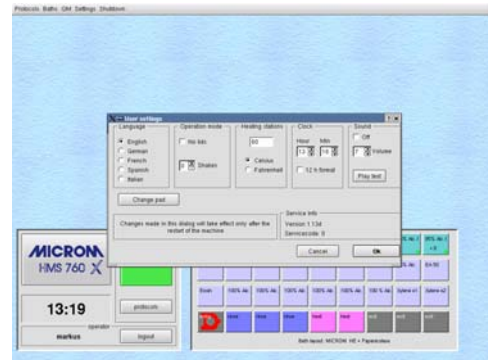
- Enter the desired setting via mousepad.
- A 12-h format can be selected here via the mousepad.
- After having carried out all desired settings, confirm them with OK.
- The following message will appear: "Changes made in this dialog will take effect only after the restart of the machine."
- To activate the settings, the instrument must be shut off and started again via the notebook.

Change pad:

- Click "Change pad" via the mousepad, if the pad is to be replaced.
- The robotic head moves into the front left corner. For easy access, the pad is swivelled downwards.
- After having replaced the pad, normal routine operation can be continued.
- The pad cannot be replaced during staining processes.

Sound level

The sound level for acoustic signals or error messages and/or alarm can be altered and/or turned off via the menu Settings / User settings. As an alternative, the sound level can be altered via the keyboard of the notebook via Ctrl. +/- (some Acer notebooks have a control device for the sound level on the left side of the notebook).



To turn the sound off, mark the OFF field under Sound in the user settings.

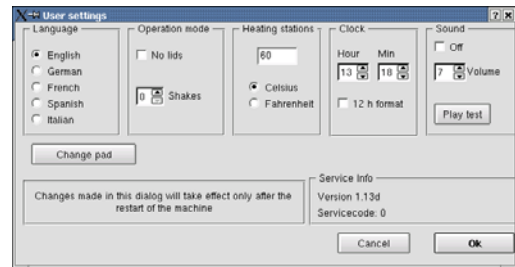


Caution:

All alarm messages are now without acoustic signal.

The standard setting of the sound level is 7 and can be increased to 20 max.

To test the set sound level, activate the field "Play test".



2-10-2 INSTALL UPDATE



Note:

Please observe the installation instructions on the supplied update CD-Rom.

2-10-3 SERVICE SETTINGS



Note:

Service settings must only be carried out by trained service personnel and are protected with a password.

2-11 ACCESSORIES

2-11-1 STANDARD EQUIPMENT

The Robot Stainer HMS 760X is supplied with the following accessories:

	Cat. no.
32 reagent containers (glass)	184310
or	
32 reagent containers (plastic)	184390
37 lids	411176
1 power cord	
220 - 240 V/50 - 60 Hz	314620
100 - 120 V/50 - 60 Hz	314610
1 feed hose, 4 m	184350
1 drain hose, 3 m	184360
1 sponge (5 pcs.)	184340
1 charcoal filter (already installed)	184320
1 charcoal filter (reserve)	184320
1 arm for notebook	
1 external disc drive	336970
2 carrying handles (for the rear side)	411640
2 carrying handles (for the front side)	411650
1 instruction manual	387743

When ordering the version HMS 760-A, with DI water, the following accessories are also supplied:

1 feed hose for DI water

2-10-2 ADDITIONAL ACCESSORIES

	Cat. No.
Reagent beaker, made of glass	184310
Reagent beaker, made of plastic	184390
Charcoal filter	184320
Sponge (5 x 2 pcs.)	184340
Standard basket for CoverTech (30).	172550
Basket carrier for standard baskets	556130
Basket carrier for RCM 2000/Meisei, (2x20)	556140
Basket carrier for RCM 2000/Meisei (2x30)	556160
Basket carrier for Sakura (tape coverslipper), (2x20)	556150
Uninterruptable power supply	
230V/60 Hz	314970
115V/50 Hz	314980

PART 3 THEORY OF OPERATION ROBOT-STAINER HMS 760X**3-1 STRUCTURAL DESIGN**

The MICROM Robot Stainer HMS 760X has a robotic arm which is moved via an electro motor. Protocol-controlled, it can move to each single station.

The processing stations are arranged in four lines with nine bath stations each. In the front line (station 28 to 36), there are no common baths, however, stations with additional functions. These are amongst others, one input and three output stations, which are designed as separate drawers. Moreover, in the front line there are, depending on the version, two drying stations for the standard version of the HMS 760X.

For the HMS 760X with DI as option, these two stations are filled, for rinsing the specimens, with DI water.

Moreover all instruments are equipped with three rinsing stations. These rinsing stations are filled with fresh water via electro valves, pressure hose and a downstream pressure controller. The water is drained into a water basin, which has the size of approx. the entire base of the instrument for safety reasons.

The waste water as well as the reagents that have been spilled when filling/inserting the reagent baths are scoured and drained via a drain hose that must be connected to a suitable drain system. The transport logic is controlled via a notebook, which is operated with the operating system Linux.

3-2 OPERATING FEATURES

To choose the basic functions of the instrument such as selecting a protocol, starting a protocol or cancelling one or several protocols, use the 8-button touchpad keyboard on the front side of the instrument.

For further functions, such as editing, creating or deleting of a protocol as well as the definition of the 27 (3 x 9) reagent stations use the notebook.

On the monitor, the active protocols are shown.

When a staining protocol is selected via the touchpad keyboard, the software allows the protocol start in any protocol step, which has also been selected via the touchpad keyboard. Press the ENTER button to select protocol step 1 as default.

3-3 FUNCTION

When starting a protocol, a sensor checks whether there is a specimen holder in the input station.

Then the robotic arm moves to the input station and lifts the specimen basket by means of a lifting mechanism on the Z-axis out of the station and drops the specimen basket off via rhythmic up and downward movements to minimize reagent carryover.

Now the cover, which has been swivelled to the side, is swivelled back downwards and placed onto the empty station. Simultaneously, a dripping sponge (mentioned below as CP) is swivelled under the specimen basket, to avoid dripping during the basket transportation. Now the specimen basket is placed onto the sponge and remaining drops are absorbed by the sponge.

The liquid which is absorbed by the sponge then flows into a reservoir with magnetic valve, which is placed below the sponge.

After a variable time, which is determined by the computer, the collected liquids of the reservoir are emptied into one of the rinsing stations. This avoids the spilling of liquids. The emptied liquids are then washed out of the respective rinsing station.

The robotic arm moves in X- and Y-direction to the destination and inserts the specimen basket into the destination. Before, however, the CP is swivelled away to the side via the Z-drive. All transportation movements are repeated in the same way. After having inserted the specimen basket into a station, the robotic arm can carry out further transportations for staining protocols which are running at the same time. The specimen agitation is independent from the transportation arm and can be turned on and off for each station individually.

The software allows to interlace several different staining protocols. However, there must be no collision (= simultaneous need from several protocols for a reagent station) during the process. Before another protocol can start, the software checks whether there might be a collision.

Further protocols are interlaced within their flexible times with already running protocols.

At the end of the protocol, the specimen basket is placed into one of the three vacant output stations.

PART 4 WORKING WITH THE ROBOT STAINER HMS 760X

4-1 PREPARATIONS

Before turning on the instrument, please note the following:

- Check that all stations, including input and output stations are covered with a lid. Station 29 must be covered with 2 lids.



Caution:

Briefly remove all the lids and wipe off the condensation water on the bottom or let it drop off.

- Check if the liquid level in each station is correct.
- Turn on the water flow.
- Check if the sponge is clean.
- Close the hood.

4-2 STAINING OF SPECIMENS

- The hood of the instrument must be closed.
- Turn on the power switch of the instrument.



Note:

Now the initialising phase is carried out. The transportation arm moves into its end position to a stop. After this phase, the main screen is shown on the monitor.



Caution:

Insert the basket with specimens into the basket carrier. When doing so, the higher edge of the basket must show to the outer side.



Caution:

When inserting the basket carrier into the input station, please note that the two dents show to the left side and the one in the middle to the right side. Otherwise the basket carrier will not be registered by the instrument.

- Remove the lid.
- Insert the basket carrier into the input station.
- Close the input station.
- Via the UP/DOWN buttons select a protocol and start it.



Note:

If the protocol is to be started in the first step, press the ENTER button once more. Otherwise, select the desired step for the start via the UP/DOWN buttons.

- To avoid position conflicts, equivalents can be defined (see part 2-4).
- To better interlace protocols flexible times can be entered. Select them as large as possible.



Caution:

The flexible time of station a depends on the maximum duration time of the specimen in a reagent and may vary.



Caution:

After the daily routine work has been completed, the water flow to the instrument must be turned off.

- After routine work, turn off the instrument on the green touchpad key.

4-3 HOW TO AVOID MALFUNCTIONS

- Before turning on the instrument, check that all stations are covered in a correct way. (Station 29 must have two lids). Please note that the lids are not shifted.
- All pins for the specimen agitation must be inserted in a correct way.
- Check for correct liquid level.
- Insert the basket carrier.
- Insert the basket with specimens into the basket carrier in a correct way. In doing so, the higher edge of the basket must show outwards.
- To avoid glass damage, insert the slides into the intended guidances of the basket.
- Input and output station must be closed. By no means, open them while the basket carrier is just inserted or removed.
- Insert the sponge into the cover manipulator.
- Check, if the charcoal filter has been inserted.



Danger:

The instrument must not be operated without charcoal filter.

- Moreover, sufficient space (approx. 15 cm) for ventilation must be guaranteed on either side of the instrument.
- Correct water connection must be guaranteed.
- Water flow must be free from impurity (e.g. rust precipitation). If necessary, add a filter.
- The water drain must have a constant declination.
- Do not mark the lids of the stations, as they are replaced during a protocol run.
- Do not place heavy objects onto the hood.
- Before turning off the instrument, please note that all protocols have been processed.



Caution:

Turn off the water flow after having finished the daily routine.

- After the daily routine, turn off the instrument on the green touchpad key.

PART 5 MAINTENANCE AND CARE

5-1 CLEANING AND CARE

Cleaning, care and decontamination of the slide stainer depends on how frequently the instrument is used. However, it is recommended to shut the instrument off every 6 - 8 weeks.

Please proceed as follows:

- Make sure that all protocols have been finished.
- Remove the baskets with slides.
- Turn off the mains switch of the instrument and unplug the unit.
- Open the hood.



Danger:

Open the hood completely so that it reaches its stable end position. To avoid damage to the instrument or injuries of persons, keep and close the hood on its handle.

- Clean the sponge daily.
- Remove the bath lids and clean them with appropriate agents outside the instrument.
- Remove the bath containers and dispose of the contents according to the rules and regulations of the respective lab.
- Reagent containers, stainless steel surfaces, input and output stations can be cleaned with all disinfectants for surface treatments on the basis of alcohol, which are listed in the regulations of the respective country.



Note:

For stainless steel surfaces use commercially available household cleaners for stainless steel with a humid cloth or a sponge. Do not use cleaning sponges made of steel wool and products containing vinegar, citric acid or hydrochlorid acid.

- Then unhinge the loading and output drawer, remove them and clean them with appropriate agents.
- Clean the hood with glass detergents.



Note:

During cleaning work, please note that the agitation pins remain in their intended position.



Note:

When cleaning the instrument, please note that only slightly humid tissues are used.

- To clean the notebook, only use a dry cloth.

5-2 REPLACEMENT WORK

5-2-1 REPLACING THE SPONGE

The sponge should be replaced once a week.

- Remove the sponge from the collecting tray and insert a new one.



Note:

To guarantee operational security of the instrument, only use the sponge type, inserted from the factory (cat.

no. 184340).

5-2-2 REPLACING THE CHARCOAL FILTER

The charcoal filter should be replaced every 6 - 9 months.

- Loosen the screws of the filter compartment cover on the right side of the bath stations.
- Remove the cover.
- Remove the charcoal filter and insert a new one.
- Close the cover again and tighten the screws.



Note:

To guarantee operational security of the instrument, only use the charcoal filter, inserted from the

factory (cat. no. 184320).

PART 6 ERROR DIAGNOSTICS AND ERROR MESSAGES

6-1 ERROR DIAGNOSTICS

Error diagnostics	Cause	Remedy
There is no heating after a five-minute warming-up of the drying station	– Integrated overheating protective switch was activated due to an error	– Contact MICROM headquarters
No water flow	– No water connection	– Check water connection – Check pressure controller – Contact MICROM headquarters
Different staining results	– Incorrect water pressure	– Check water pressure, 2,5 bar min. Fine adjustment via pressure controller integrated on the instrument
Excessive carryover	– Reagent container too full. Basket carrier carries over reagents. – Sponge in collecting tray is excessively soiled	– Do not exceed marking line for filling amount – Clean or replace the sponge
No agitation in one or several stations	– No agitation pins inserted in holes	– Insert pins
Instrument is turned on, however, there is no message on the monitor	– Loose connecting cables	– Check connecting cables
After having activated the stand-by button on the notebook, the instrument does not start	– Wait until loading process has been finished. Main power switch of the instrument on the left lower side is turned off	– Check main power switch


Note:

In case of malfunctions and/or service work, please turn off the instrument and contact your local dealer.

PART 7 CONDITIONS FOR THE TRANSPORTATION OF THE INSTRUMENT

7-1 TAKING BACK THE INSTRUMENT FOR REPAIR OR ROUTINE MAINTENANCE

Repair or maintenance work are normally carried out at the site of installation. If this is not possible for some special reasons, the instrument can be returned to MICROM. The contact address can be found at the beginning of this instruction manual.

- To guarantee trouble-free function of the instrument after transportation, please note the below-mentioned measures for the transportation preparation.
- In addition, the conditions for storage and transportation as mentioned in part 1-2 must be observed during the entire transportation.



Biohazard:

Please also note the precautionary measures described in our safety precautions concerning biological hazards!

Measures for closing down:

- Turn off the instrument.
- Unplug the unit.
- Remove reagent baths, lids and other accessories from the instrument.
- Loosen the connection cables of the notebook.
- Dismount the arm for the notebook.
- Loosen the water connections.
- Secure the robotic arm against moving. For this, insert the attached foam parts.
- Install the carrying handles.

For transportation outside closed buildings, please observe the following additional measures:

- Place the instrument onto the wooden palett (fig. 2.1).
- Arrange the removed accessories (fig. 2.8 and 2.9) into the intended transportation packing.
- Slightly tilt the instrument (fig. 2.4) on the handles and place the foam parts (fig. 2.2, 2.3 and 2.5) underneath the instrument.
- Place the wooden packing (fig. 2.6) over the instrument.
- Put the wooden cover (fig. 2.11) onto the packing.
- Attach the tightening strips around the packing.

7-2 DISPOSAL OF THE INSTRUMENT AFTER FINAL SHUTDOWN

After the final shutdown of the instrument, we recommend to contact a local recycling company for the disposal according to the national applicable regulations.



To be applied in the countries of the European Union and other European countries with a separate collecting system within the waste management.

The marking of the product and/or the respective literature indicates that, after its final shutdown, it must not be disposed of together with ordinary domestic waste.

- Please dispose of your instrument separately from other waste to not harm our environment and/or human health by uncontrolled waste disposal.
- Recycle your instrument to support the sustainable recycling of material resources.
- **Industrial users** should contact their suppliers and observe the conditions of the contract. This product must not be disposed of together with other commercial waste.
- **Please contact your supplier!!**