



Leica ASP300 S

Advanced Smart Processor

Automated vacuum
tissue processor

Operating Manual

Leica ASP300S

V1.0 English - 07/2006

Always keep this manual together with the instrument.
Read this instruction manual carefully before working
with the instrument.

Leica

MICROSYSTEMS

NOTE

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For the instrument serial number and year of manufacture, please refer to the name plate at the back of the instrument.

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1. Important information

Symbols used in this manual



Warnings appear in a gray box and are marked by a warning triangle .



Notes, i.e. important user information appear in a gray box and are marked by an information symbol .



Flammable solvents and reagents are marked with this symbol.



Instrument surfaces which become hot during operation are marked with this symbol. Avoid direct contact with these surfaces - they may cause burns.

(5)

Figures in brackets refer to item nos. in drawings.

ENTER

Function keys to be pressed on the instrument touch screen are written in bold-print capital letters.

Qualification of personnel

- The Leica ASP300 S may be operated only by trained laboratory personnel.
- The instrument may be operated only according to the instructions contained in this manual.

Designated use

The instrument has been designed so that it is safe to use by the operator as well as for processing specimens – provided that it is operated according to the present instruction manual.

The Leica ASP300 S is a modular automated tissue processor designed for the following laboratory applications:

- fixation,
- dehydration
- paraffin wax infiltration of histological tissue specimens.

The Leica ASP300 S must be operated exclusively with the reagents listed

in chapter 3.5 - "Compatible reagents".



Any other use of the instrument is considered improper! Failure to adhere to these instructions may result in an accident, personal injury, damage to the instrument or accessory equipment.

Instrument type

All information provided in this manual applies only to the instrument type indicated on the title page.

A name plate indicating the instrument serial number is attached to the back of the instrument.



Fig. 1



Make sure to comply with the safety instructions and warnings in this chapter. Make sure to read these instructions, even if you are already familiar with the operation and use of other Leica products.

2.1 Safety instructions

This instruction manual includes important information related to the operating safety and maintenance of the instrument and it is an important part of the product.

This instrument has been built and tested in accordance with the safety regulations on electrical measuring, control, regulating and laboratory devices.

In order to maintain this condition and to ensure safe operation the operator must comply with the instructions and warning contained in this instruction manual.



If additional requirements on accident prevention and environmental protection exist in the country of operation, this instruction manual must be supplemented by appropriate instructions to ensure compliance with such requirements.



For current information on applicable standards, please refer to the instrument's CE declaration and visit: <http://www.histo-solutions.com>



The protective devices on both instrument and accessories may neither be removed nor modified. Only authorized and qualified service personnel may repair the instrument and access the instrument's internal components.

2.2 Warnings

The safety devices installed in this instrument by the manufacturer only constitute the basis for accident prevention. Primarily responsible for accident-free operation is above all the institution which owns the instrument and, in addition, the designated personnel who operates, services or repairs the instrument.

To ensure trouble-free operation of the instrument, make sure to comply with the following instructions and warnings.

2. Safety

Warnings - Markings on the instrument itself



Markings on the instrument showing the warning triangle indicate that the correct operating instructions (as defined in this manual) must be followed when operating or replacing the item marked. Failure to adhere to these instructions may result in an accident, personal injury, damage to the instrument or accessory equipment.



Some instrument surfaces become hot during operation.

They are marked with this warning label. Touching these surfaces may cause burns.

Transport and Installation



The instrument may only be transported in an upright position.

Follow the unpacking instructions carefully to avoid damage to the instrument!

A cleaning must be performed prior to each transport, during which the instrument may be shaken, tilted or lifted. Severe internal damage may otherwise occur.

The instrument **MUST** be connected to an earthed mains power outlet socket. The instrument must not be connected to an extension cord without protective earth conductor.

Ensure uniform current supply according to the set voltage!

The set voltage **CANNOT** be changed by the user.

Severe damage may occur if the instrument is connected to a power supply voltage other than that to which it was originally set.

The instrument must be set up in a well ventilated area, free from any ignition sources. The chemicals to be used in the Leica ASP300 S are both flammable and noxious.

Do not operate the instrument in rooms with explosion hazard.

If there is a significant difference in temperature between the warehousing and the installation site of the instrument and if at the same time there is a high air humidity level, condensation water may form. In this case, a waiting period of at least two hours must be observed before the instrument is switched on. Failure to adhere to this waiting period may result in damage to the instrument. Failure to adhere to this waiting period may result in damage to the instrument.

Warnings - Operating the instrument



The Leica ASP300S may only be operated by trained laboratory personnel, according to its designated use and per the present instruction manual.

The ON/STOP switch at the side of the instrument may be used in an emergency to stop the instrument during operation.

Always press **PAUSE** before opening the retort lid during processing to allow the retort to vent.

Do not remove the wax drain hose or the remote fill/drain hose until the fill or drain has been completed, as pressurized air is used to clear the hose after each fill / drain.

After refilling / replacing the reagent bottles ensure that the lids are tight. The bottles must be properly pushed home into the connection manifolds at the rear inner wall of the reagent module.

Failure to correctly plug the reagent bottles into the manifold will cause an interruption to the processing run and may result in spilling of reagents.

Fixatives containing mercuric salts, acetic or picric acid will corrode metallic components in the instrument.

After each paraffin step a retort clean cycle must be run.



Material safety data sheets can be obtained from the supplier of the chemicals. They are also available on the Internet:
<http://www.msdonline.com>

2. Safety

Warnings -handling reagents



Be careful when handling solvents!

Always wear rubber gloves and safety goggles when handling the chemicals used in this instrument.

Reagents used for tissue infiltration can be both toxic and/or flammable.

To avoid damaging the instrument only use those reagents that are listed in [chapter 3.5!](#)

Do not use acetone, benzene or trichlorethane in the instrument!

Use caution when handling paraffin wax or removing baskets – molten paraffin is hot and may cause burns.

Also, avoid personal contact with paraffin stations and retort walls – they can be very hot as well.

Dispose of waste solvents with care according to local regulations and the waste management policy of the company or institution.

Do not clean reagent bottles in an automatic dishwasher – they are NOT dishwasher-proof.

Warnings - Cleaning and maintenance



Prior to each maintenance and/or cleaning, switch the instrument off and disconnect mains power.

Do not clean the instrument with solvents containing acetone or xylene. No liquid may be spilled into the internal components of the instrument – neither during operation nor during cleaning.

When working with cleaning detergents, comply with all safety instructions by the manufacturer of the product and the laboratory management policy.

The condensate bottle should be inspected at least once every week and, if necessary, emptied.

2.3 Integrated safety devices

In the case of power failures or other processing problems the Leica ASP300 S incorporates specimen protection features such as a fluid level sensor and sophisticated software controls which ensure that processing can be completed successfully without damage to the tissue specimens.

Overpressure protection

- When power is off the air pump and air valves default to a safe condition (retort vented, no pressure generation).
- If the microprocessor control fails to stop the air pump at the right moment during retort pressurizing, a separate electronic hardware circuit will cut pump power.
- In addition, there is a safety relief valve that vents all excess air pump output to atmosphere.

Overcurrent protection

- Overcurrent conditions are protected against by both the mains fuse and the separate heating power fuses.

Overheating protection

An error is indicated and all heating is stopped by the microprocessor control if the instrument detects any of the following conditions:

- abnormally high temperature (>75 °C)
- contradictory results of the temperature sensors
- failure of one or more heating power control components
- If the microprocessor fails to interrupt heating power, independent temperature limiting hardware circuits limit the temperature rise to a safe level.
- If the temperature limiting circuits malfunction, an independent hardware thermal fuse circuit cuts power to the heating elements.

Over vacuum protection

- The vacuum system is not capable of generating a dangerous vacuum condition.

Overcurrent protection

- Overcurrent conditions are protected against by both the mains fuse and the separate heating power fuses.

3. Instrument components and specifications

3.1 Overview - instrument components

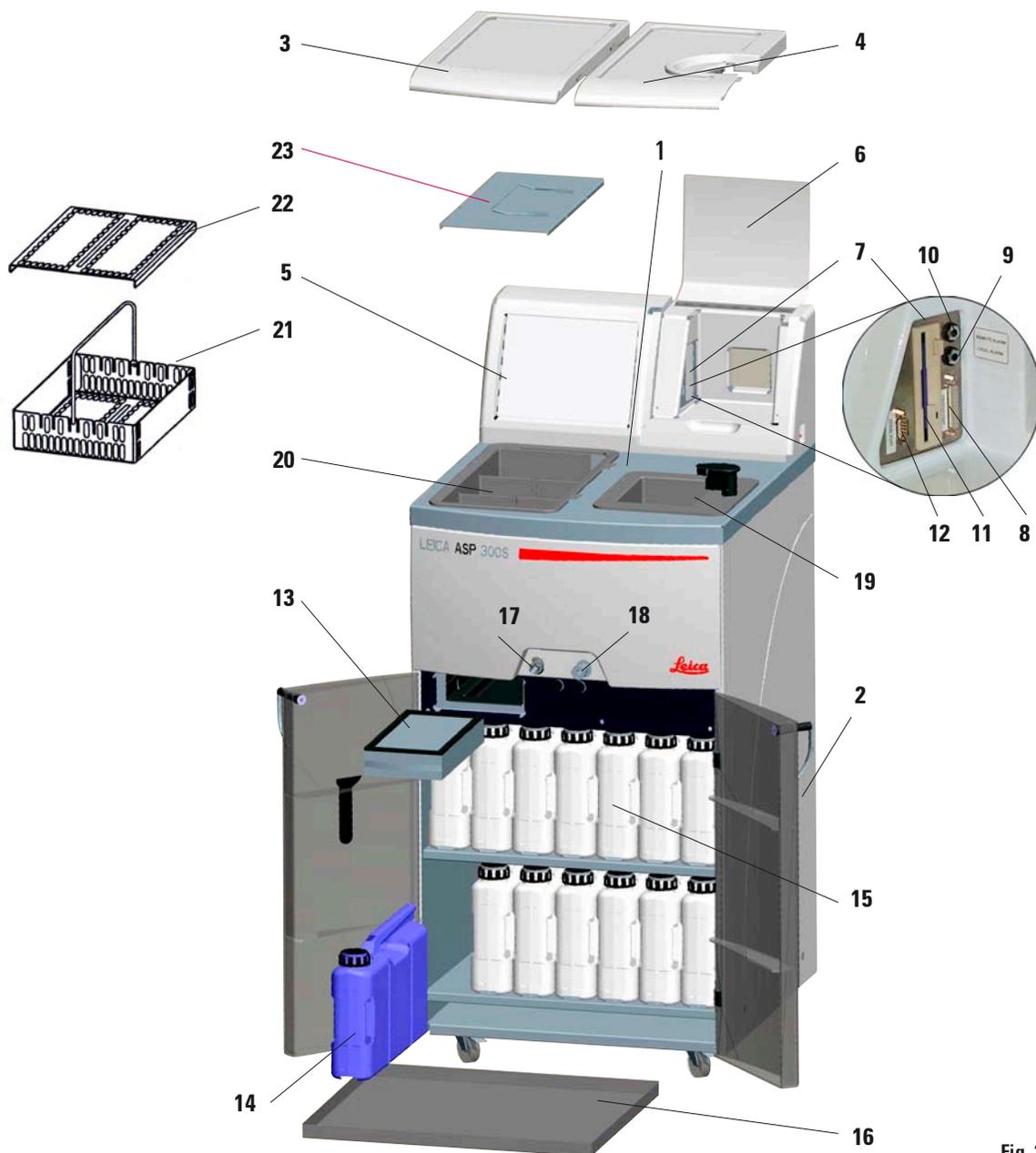


Fig. 2

3. Instrument components and specifications

Overview - instrument components

- 1 - Basic instrument - processor module
- 2 - Basic instrument - reagent module
- 3 - Wax bath lids
- 4 - Retort lid
- 5 - Touch screen
- 6 - Cover flap of the instrument console
- 7 - Instrument console comprising:
 - 8 - Printer port
 - 9 - Local alarm connection
 - 10 - Remote alarm connection
 - 11 - Floppy disk drive
 - 12 - Serial port
- 13 - Activated carbon filter
- 14 - Condensate bottle
- 15 - Reagent bottle (13 units)
- 16 - Drip tray
- 17 - Wax drain connection
- 18 - Remote drain connection
- 19 - Retort
- 20 - Wax baths
- 21 - Specimen basket
- 22 - Lid for specimen basket
- 23 - Splash protection

Instrument components and accessories

The processor module contains three paraffin wax baths, a processing retort, and also a touch screen with integrated key symbols as well as the electronic components.

The cassettes are held in three baskets (21), each of which has a capacity of up to 100 cassettes.

All processing occurs in the stainless steel retort under the pressure, vacuum and temperature conditions selected.

The quick-connect reagent bottles are stored in the reagent cabinet.

3. Instrument components and specifications

3.2 Specific instrument options

- **Reagent Management System option (RMS)** that displays the usage (length and frequency of use) of each reagent and also allows automatic ordering of reagent sequence, thus eliminating the need to physically move reagent bottles. After renewal of one or more reagents in a sequence, the RMS automatically uses the reagents in order of increasing cleanliness.
- In-process fluid recirculation ("tidal agitation") for continuous and efficient mixing of fluids.
- Remote fill/drain system – can drain and refill reagent bottles from bulk containers via the retort and a hose plugged into the processor module while the user is fully protected against coming into contact with reagents.
- Remote wax bath fill/drain feature.
- Optical fluid level sensor.
- Active paraffin wax solvent removal feature that increases the life of the wax by extracting and condensing contaminating solvents.
- Magnetic stirrer – to gently circulate reagents, ensuring uniform reagent temperature.
- Programmable finish time for processing programs.
- Three-step retort drain feature (adjustable) minimizes reagent carryover.
- Specimen processing under pressure, vacuum, alternating pressure / vacuum cycles or under ambient pressure.
- Four user-programmable clean programs. The clean programs automatically skip any steps not required to complete the clean.

3. Instrument components and specifications

3.3 Standard delivery - packing list

The basic version of the Leica ASP300 S includes the following parts:	Part no.
1 Leica ASP300 Basic Instrument	
1 Set of power cords	
230-240 V version:	
1 Mains cable "D"	0411 13558
1 Mains cable "UK" ST-BU F-5A	0411 27822
100-120 V version:	
1 Mains cable "USA-C-J"	0411 13559
1 Jumper cable - mains	0411 34604
1 Basket hook	0476 34713
3 Specimen baskets, assy. including lid,dividers, springs and handle	0476 34193
1 Remote fill/drain hose	0476 34716
1 Paraffin drain hose	0476 34721
1 Funnel	0476 43631
1 Lubricant, Molykote 111, for valves and O-rings	0336 35460
2 Activated carbon filters, assy.	0476 34150
1 Magnetic stirrer, complete	0476 34202
1 Paraffin wax scraper	0476 35923
14 Reagent bottles, plastic (13 in instrument)	0476 34274
1 Condensate collector, plastic (in instrument)	0476 34278
1 Drip tray (in instrument)	0476 34145
1 Splash protection	0476 34770
1 Maintenance kit (2 replacement lids, 9 o-rings)	0476 35921
1 Maintenance kit for pump (in instrument)	0476 35922
2 Sets of labels for reagent bottles, set of 15 each	0476 35792
1 Remote alarm plug	6844 01005
1 Operating manual for Leica ASP300 S, multi-language	0476 34712
1 3,5" HD-diskette, blank, DOS-formatted, (on rear of console cover)	
1 Demo-Program, CD-ROM	



Please check all delivered parts against the packing list and against your order to verify whether the delivery is complete! If there is any difference, please contact your local Leica Sales Office immediately.

3. Instrument components and specifications

3.4 Technical Data

Nominal voltage:	Two factory-preset voltages (not user-adjustable): 100 to 120 V or 230 to 240 V
Nominal frequency:	50 to 60 V
Main fuses:	Two fast-blowing melting fuses, 20 x 5 mm, UL-approved <ul style="list-style-type: none">• for 100 to 120 V ; F 10 A 250 VAC• for 230 to 240 V ; F 5 A 250 VAC
Nominal power:	1000 VA
Dimensions, (W x D x H), in mm:	595 x 680 x 1,325
Dry weight, unpacked:	approx. 160 kg
Weight, packed:	220 kg
Operating temperature range:	15 °C to 35 °C
Relative humidity:	10 % to 80 %, non-condensing
IEC 1010 classifications:	Protective class 1 Pollution degree 2 Overvoltage installation category II: <ul style="list-style-type: none">• 800 V impulse (120 V systems)• 1500 V impulse (240 V systems)
Altitude:	2500 m maximum
Local / remote alarm relays:	30 V DC, maximum 2 A 2 connections: Both single voltage-free, changeover contacts (both Normally-Open and Normally-Closed connections available)

Paraffin wax baths

Number of baths:	3
Volume (liters):	4.3 l per bath
Melt time:	approx. 10 hrs
Temperature:	40 to 65 °C
Temperature accuracy:	± 1 K

3. Instrument components and specifications

Retort

Capacity:	max. 300 cassettes
Reagent volume:	4.3 l
Temperature (paraffin):	40 to 65 °C
Temperature (processing reagents):	ambient or 35 to 55 °C
Temperature (cleaning reagents):	50 to 65 °C
Temperature accuracy:	± 1 K
Filling time: approx.	90 sec
Drain time: approx.	80, 120, 140 sec (adjustable)
Impregnation vacuum:	-70 kPa (g)
Impregnation pressure:	35 kPa (g)
Fill vacuum:	-70 kPa (g)
Drain pressure:	35 kPa (g)

General

Reagent bottles:	10
Cleaning solution bottles:	3
Maximum bottle volume:	5.0 l
Printer:	Optional accessory
Pretest check:	ON/OFF
Fluid level sensor:	ON/OFF
Recirculation (pump in/out):	ON/OFF
(a) Time before 1st cycle:	16 min
(b) Time between cycles:	20 min

System setup

Password status:	Supervisor / User
Type of password:	alphanumeric, freely selectable
Reagent Management Status:	ON/OFF
Software access control (lock mode):	ON/OFF

3. Instrument components and specifications

3.4 Technical Data (continued)

Hardware and Software:

- Large color Liquid Crystal Display (LCD) and touchscreen.
- User-friendly, intelligent software.
- 3,5" floppy drive and printer port.
- Alarm system with two remote alarm sockets.
- Password-protected instrument supervisor mode.
- Multiple specimen protection system.

Capacities:

- 15 programs that consist of up to 10 reagent and 3 paraffin wax steps.
 - Time per program step: 0 to 99 hours, 59 minutes.
 - Delay time: max. 7 days.
- Up to 300 cassettes can be processed simultaneously.
- Four user-programmable retort clean programs.
- Wax clean program.
- 10 reagent bottles.
- 3 wax baths.
- 3 cleaning solution bottles.
- 1 condensate bottle.
- Reagent temperature adjustable from 35 °C to 55 °C or ambient.
- Paraffin temperature adjustable from 40 °C to 65 °C.
- Choice of three retort drain rates of 80, 120 and 140 seconds.
- Up to 100 reagent names in memory.

3.5 Compatible reagents

The following reagents may be used in the Leica ASP300 S:

Fixatives

1. Formalin, buffered or unbuffered
2. Formalin saline

Dehydration

1. Ethanol
2. Isopropanol
3. Methanol
4. Butanol
5. Industrial Methylated Spirits

Clearing

1. Xylene
 2. Toluol *
 3. Chloroform *
- * Prior to using these reagents, contact your Leica representative or Leica directly for information on necessary protective measures.

Paraffin wax

1. Paraffin



Caution:

Reagents other than those listed here may damage some components of the instrument.

Do not use acetone, benzene or trichlorethane in the instrument.



Fixatives containing mercuric salts, acetic or picric acid will corrode metallic components in the instrument and shorten instrument life.

If you choose to work with such fixatives, it is essential to perform a clean cycle which contains multiple water rinses each time after use, to minimize damage.

In addition, we recommend frequent and regular preventive maintenance by the Leica Technical Service.

4. Setting up the instrument

4.1 Site requirements

- The instrument needs approx. 650 x 700 mm floor space.
- Practically vibration-free floor.
- Room temperature constantly between +10 °C and +35 °C.
- Relative humidity maximum 80%, non-condensing.
- Avoid vibrations, direct sunlight and heavy variation in temperature.

Moving the instrument



4.2 Electrical connection



Attention!
Follow the instructions below carefully to avoid damage to the instrument.



CAUTION - Unit wired for 230-240 Vac
Refer changing to qualified service personnel.



The chemicals to be used in the Leica ASP300S are both flammable and noxious. The Leica ASP300S must be set up in a well ventilated area free from any ignition sources. Do not operate the instrument in rooms with explosion hazard.

After the instrument has been unpacked (see unpacking instructions attached to outside of transport crate) it must be touched only at the points marked with dots '●' for transport to its final site of installation.

Once the instrument has been installed there, the brakes on the instrument rollers (24) must be locked.



The instrument must be installed such that the mains switch at the rear of the instrument (item no. 42 in Fig. 4) can easily be accessed at any time.

- Check the voltage label (Fig. 3) on the rear of the instrument to ensure that the instrument delivered is set to the correct voltage range.



Caution!
Severe damage may occur if the instrument is connected to a power supply voltage other than that to which it was originally set. The power supply voltage for the instrument is factory preset, and **CAN-NOT** be altered by the user.

Fig. 3

Connecting the instrument to mains



The instrument **MUST** be connected to an earthed mains power outlet socket.

It is recommended that the ASP300 S be plugged into a wall socket that has Ground Fault Circuit Interruption (GFCI) protection - as an additional electrical safeguard.

Make sure to use the appropriate mains cable for the local voltage supply (wall outlet).

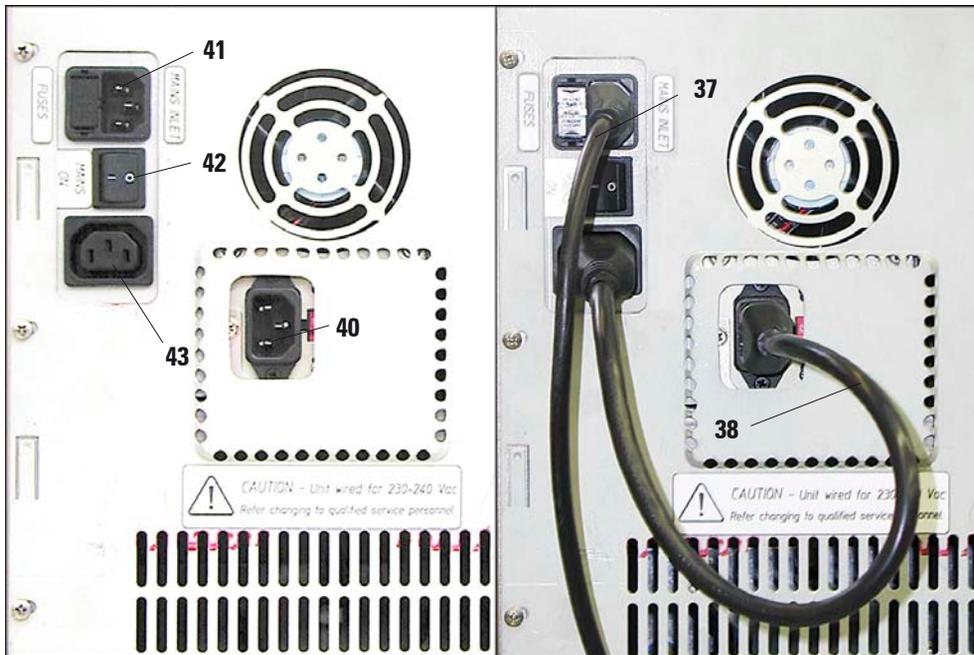


Once the instrument has been switched on, the mains switch (ON/OFF) (41) should always remain in position ON.



Important!
Specification for connection (40) is as follows:
100 - 120 V or 230 - 240 V,
max. 200VA.

- Connect the mains cable (37) to the mains power supply socket (41).
- The jumper cable (38) which is supplied as part of standard delivery connects the mains power supply output (43) to the electronics module input (40).



Left:
Electrical connections at the rear panel of the instrument.

Right:
Correct connection of the cables

Fig. 4

4. Setting up the instrument

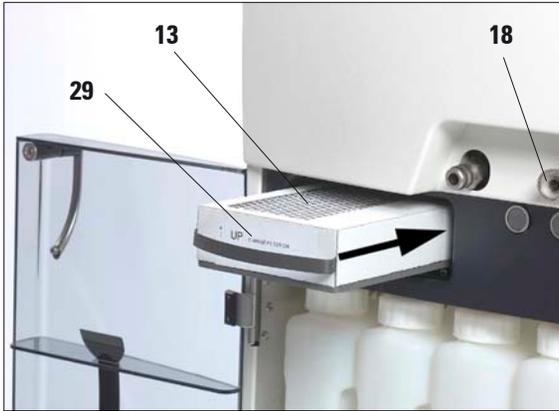


Fig. 5

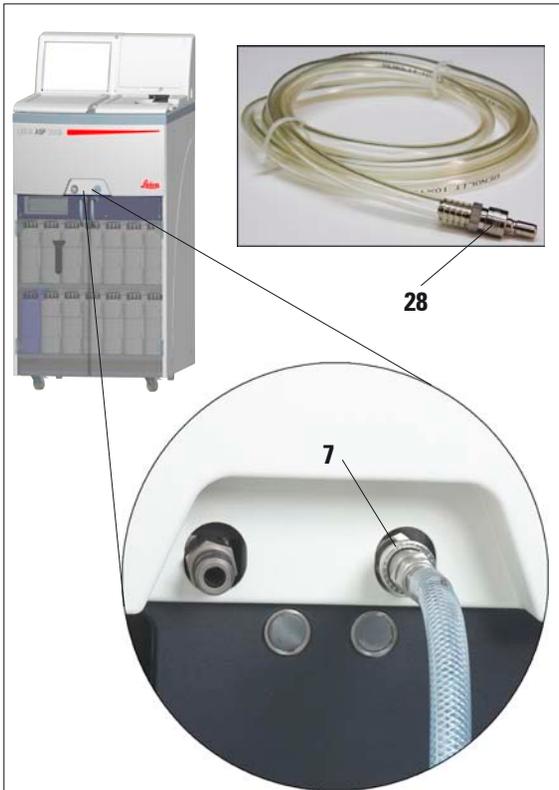


Fig. 6

4.3 Installing the accessories

- Place the instrument in the definitive installation position.

Activated carbon filter

- Unpack the activated carbon filter and insert it into the instrument (see Fig. 5).



Make sure to insert the filter with the correct side facing upwards. See label (29) at

the front of the filter - the arrow must point upwards.

Remote fill / drain hose

- Connect the supplied remote fill/drain hose to the remote drain connection on the front of the instrument (refer Fig. 6).

- Important!

When inserting the hose into the fill/drain connection (item 7 in Fig. 6) the connecting device (28) of the hose must lock with an audible click.



If bulk containers can be located next to the instrument during remote filling and draining, the hose may be shortened to improve handling and the fill/drain rate.

If the hose is shortened, a vee-notch can be cut into the hose end to ensure a clear passage for fluid flow.

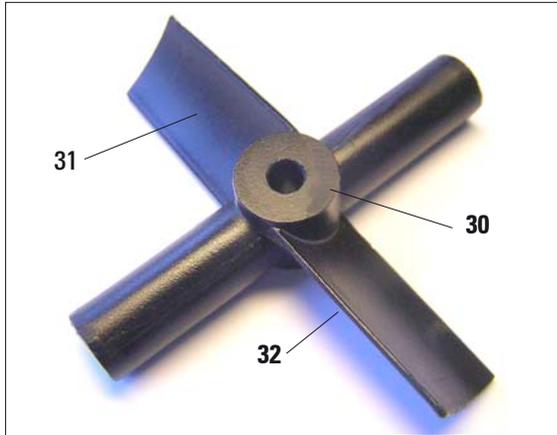


Fig. 7

Magnetic stirrer

- Unpack the magnetic stirrer (30) (Fig. 7) and insert into the retort.
- **Important!** Insert the magnetic stirrer so that the convex side (32) of the rotor blades (31) faces down. (Fig. 7)
Inserting the stirrer incorrectly will result in unsatisfactory stirring action.

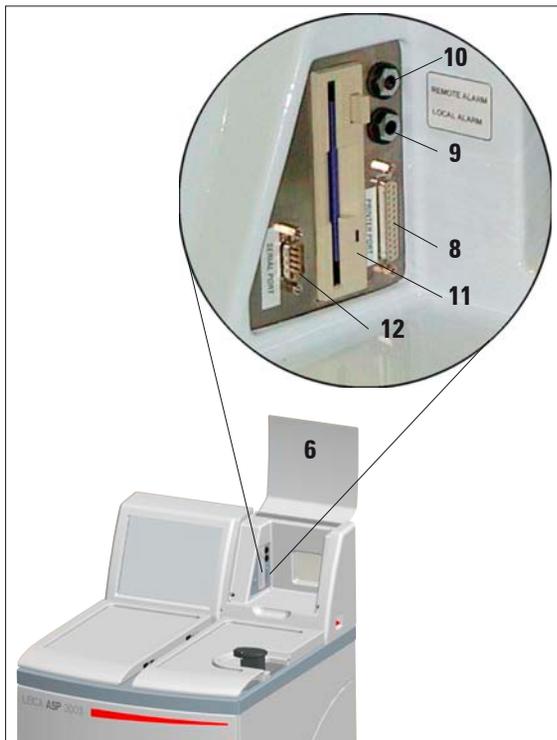


Fig. 8

4.4 Setting up the data connections

Printer (optional)

- Lift the flap of the instrument console (6).
- Connect the printer to the printer port (8) in the console via a standard Centronics cable (Fig. 8)
- A suitable printer can be recommended by your Leica distributor.
- If conformance to electromagnetic interference standards is essential, a specially shielded printer cable will be required.

Other connections

- For additional data transfer and storage the instrument console is equipped with a standard 1,44 MB floppy disc drive (11) and an RS 232 serial interface (12).

4. Setting up the instrument

4.5 Alarm functions

The Leica ASP300 S is equipped with 3 different alarm functions:

Instrument alarm

This alarm is generated from within the Leica ASP300. The Instrument alarm is used for all alarm messages.

Local alarm

This alarm is external to the Leica ASP300 S, e.g. in the office of the instrument operator.

The Local alarm is used when the instrument cannot continue with the current program or operation because of a problem.

Alarm connections (optional)

If required, connect the local and/or remote alarm systems to the alarm sockets (9, 10 in Fig. 8) at the instrument console, using the phono jack (34) supplied (\varnothing 6.3 mm).

Local alarm: socket (9)

Remote alarm: socket (10)

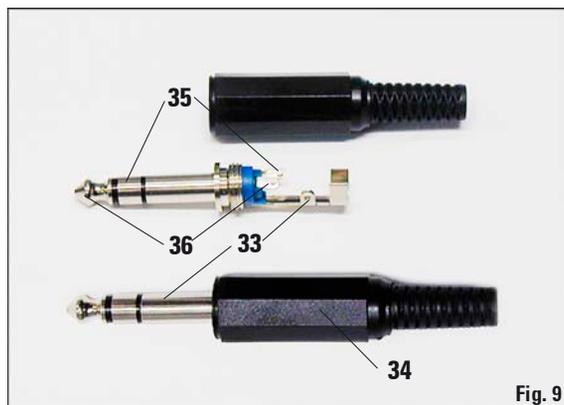


Fig. 9

Remote alarm

This alarm is also external to the Leica ASP300 S. If installed, it might typically be connected to a remote dialer that sends an automated phone message to the person responsible for after-hours problems.

The remote alarm is only generated when the instrument cannot continue with a Processing program.



Note that if installed, the remote alarm will still operate even if the local alarm is not installed.



Both, local and remote alarm options, are relays that are voltage-isolated from the rest of the instrument. When an error condition occurs, the relevant alarm circuit closes.

The remote alarm device connected to the instrument must be rated at less than 2 amp.

A maximum voltage of 30 V DC may be present.

Each alarm is connected to plug (34) as follows (see Fig. 9):

Common terminal: tip (36)
connection inside

Normally Open
Contact: First sleeve (35)
connection outside

Normally Closed
Contact: Second sleeve (33)
Threaded connection

4.6 Switching the instrument on



Caution!

The instrument **MUST** be connected to an earthed mains power outlet socket. It is recommended that the ASP300 S be plugged into a wall socket that has Ground Fault Circuit Interruption (GFCI) protection - as an additional electrical safeguard.

- Connect the instrument to the mains power outlet socket. If applicable, switch the mains power outlet socket ON.
- Switch the **ON/OFF** switch (item 42, Fig. 2) located at the rear panel of the instrument (**ON**).
- Switch the **ON/STOP** switch at the right side of the instrument (**ON**).



The **ON/OFF** switch at the rear and the **ON/STOP** switch at the side should be left **ON** at all times to maintain heating to the paraffin wax stations. The **ON/STOP** switch at the side of the instrument may be used in an emergency to stop the instrument during operation.



- The instrument will take a few minutes to initialize. See opposite for corresponding touch screen display (Fig. 10).
- After that, the **FAVORITES** screen will be displayed (Fig. 11).

Fig.10



Fig. 11

Screen saver

- A screen saver will operate turning the screen off when no key has been pressed for a (user-)programmable time. Press any part of the touchscreen to restore the screen. After having been restored, the screen will be inoperational for a few seconds to avoid accidental activation of any keys.

4. Setting up the instrument

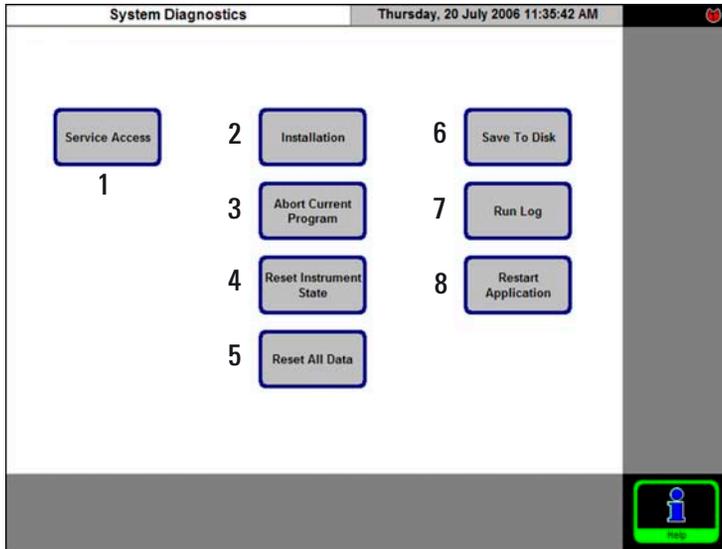


Fig. 12

The following functions can be selected:

- 1 - Access for Service Engineers only.
- 2 - Access **INSTALLATION** menu.
- 3 - Abort the current program.
- 4 - Abort the current program and delete the current allocation of reagents to reagent bottles and retort.
- 5 - Delete all programs and reset instrument status (all lists will be empty).
- 6 - Store actual instrument status on floppy disk.
- 7 - Display run log.
- 8 - Restart instrument.

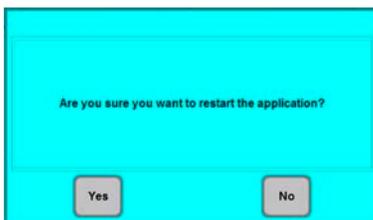


Fig. 13

System Diagnostics Menu

If, during initialization, "Touch here ..." (refer Fig. 10) is touched and subsequently the supervisor password is entered, the **SYSTEM DIAGNOSTICS** menu+ (Fig. 12) opens up, giving access to standard instrument settings.

Attention!

These settings must be modified by experienced operators only. Serious instrument malfunctions may occur if any settings are modified wrongly.

To exit this menu the instrument has to be restarted: press **RESTART APPLICATION**.

For instrument reinitialization, press **YES** to confirm the query "**ARE YOU SURE YOU WANT TO ...**" (Fig. 13).



Such prompts are issued before all important, irreversible steps. This allows the operator to undo changes caused by accidental key strokes.

- Initialization starts again from the screen shown in Fig. 10.

4.7 Touchscreen functions



Fig. 14

The Leica ASP300S is programmed and operated via a colored LCD touch screen.

The control software contains an on-line help feature where detailed information on the operation of each screen, on error messages and on the software functions can be found.



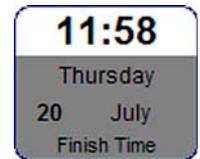
Help can be accessed from any screen by pressing the **HELP** button.

Button symbols

Press the button to activate the corresponding function on the Leica ASP300S touchscreen.

All buttons have a uniform design for easy identification.

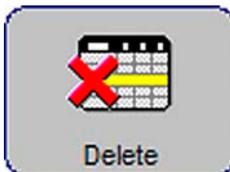
The buttons may contain text labels or graphical icons.



Enabled



Disabled



Buttons on the Leica ASP300S have different appearances depending on whether they are enabled or disabled.

A button is disabled if the function that it performs is not applicable at the moment.

Disabled icons have a thinner border than active ones as shown here.

If a disabled button is pressed, a help text will be displayed, explaining why this particular button is disabled.

4. Setting up the instrument

4.8 Checklist for first operation

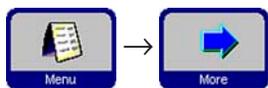


Once the instrument is ready to be switched on, the menus below have to be accessed to set the required parameters.
For detailed instructions on each individual parameter, refer to the On-line help feature.

Screen	→ Press button	Parameter settings
 → 	System Monitor	Enter carbon filter age warning and pump warning threshold.
 → 	Installation	Enter instrument name and select language. Activate printer (optional).
 → 	System Setup	Set all parameters as required, especially wax bath set temperature. Check whether date and time are correct.
 → 	Reagents → 	Add the desired reagents and edit the warning thresholds when " REPLACE REAGENTS " will be displayed.
 → Stations	Reagent Name	Allocate a reagent to each station.
 → Smart Screen or Reagent Status		Fill the reagent stations (bottles), either via remote drain/ fill function (SMART SCREEN) or manually (REAGENT STATUS).
 → Programs → 	Program Name	Create the programs you need. Both processing and retort cleaning programs can be copied and modified.
 → Favorite Programs	Program Name	Allocate the most popular programs to the FAVORITES menu and, if desired, set a finish time for these programs and allocate a symbol.

Fig. 15

5.1 Setting up the instrument parameters



From the start screen, press **MENU** to go to the **MENU FUNCTIONS** screen, then press **MORE** to go to the **MORE MENU FUNCTIONS** screen.

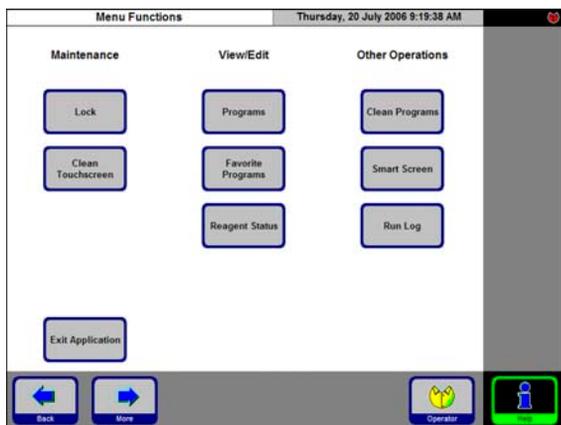


Fig. 16

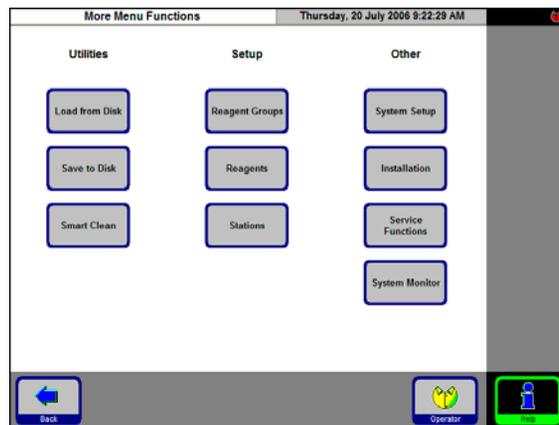


Fig. 17

5.1.1 System setup



In the window **MORE MENU FUNCTIONS** press **SYSTEM SETUP**.

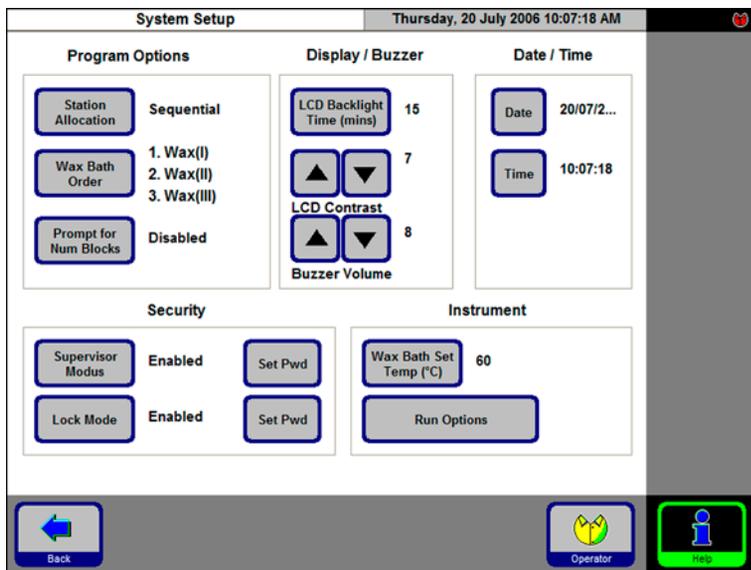


Fig. 18

The **SYSTEM SETUP** screen is divided up into five selection fields:

- Program Options
- Display/Buzzer
- Date/Time
- Security
- Instrument

5. Operation

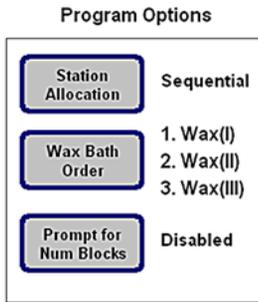


Fig. 19

PROGRAM OPTIONS

Select the options with which programs are executed here. Press a button to change the associated value.

- STATION ALLOCATION:** **by Age** or **Sequential**
 - by Age** - **RMS** is activated, reagents will automatically be used in order of increasing cleanliness.
 - Sequential** - reagents will be used in sequential order of stations.
- WAX BATH ORDER:** **Auto** or **1.; 2. ; 3.**

Can only be activated, when **STATION ALLOCATION** is set to "**Sequential**" - otherwise the order of wax baths will be managed by the **RMS**.
- PROMPT FOR NUM BLOCKS:** **Enabled** or **Disabled**
 - Enabled** - When starting a program, the actual number of blocks must be entered. This is recommended with the **RMS** being enabled.
 - Disabled** - Number of blocks can be entered optionally (not mandatory to enter no. of blocks).

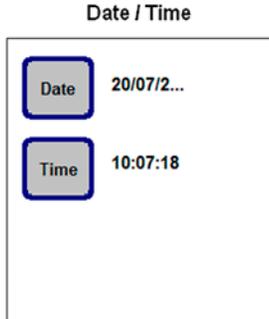


Fig. 20

DATE / TIME

Be sure to verify that the date and time entered do actually correspond to the local time/date, as this will ensure that all programs are carried out correctly.

Press the buttons to access the entry windows where settings or corrections can be made, if necessary.

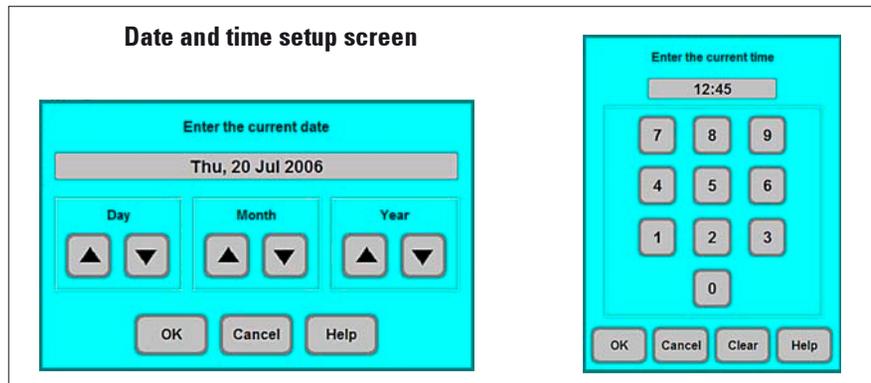


Fig. 21

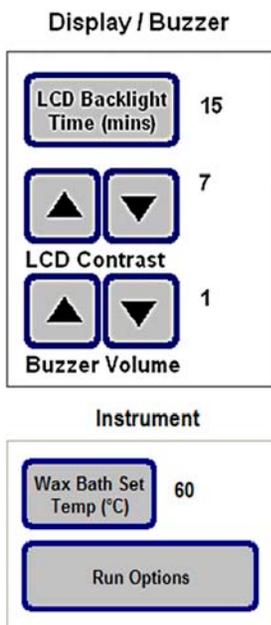


Fig. 22

DISPLAY/BUZZER

- The number next to **DISPLAY OFF** indicates the remaining time (in min) until the screen saver (after the last user action) is activated.
- **LCD CONTRAST** can be set from 0 to 14.
- The **BUZZER VOLUME** can be set between 1 and 10.

INSTRUMENT

Press **WAX BATH SET TEMP.** to open the input screen (Fig. 23) for the wax bath temperature.

Set the temperature according to the value required by the wax used. Select the highest permissible temperature for the wax to ensure that a minimum loss of temperature occurs when filling the retort.

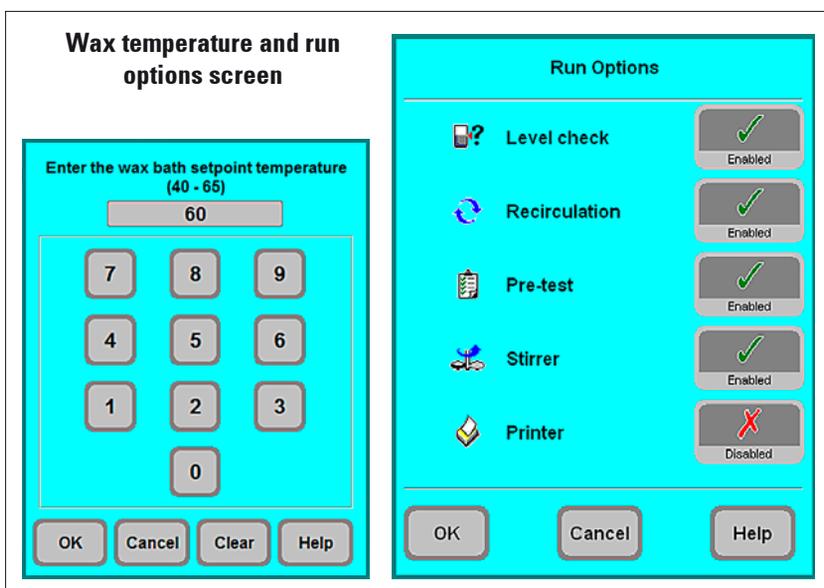


Fig. 23

Access the **RUN OPTIONS** function to display the options selected for the current program.

The options selected will be applied to **ALL** programs! A printer option will be displayed only, if a printer has been configured for the instrument.

The individual options are described in [chapter 5.3.1](#).

5. Operation



Fig. 24

SUPERVISOR PASSWORD: Enabled or Disabled

Enabled - Two different types of user profiles are available. A password is required for supervisor level access to the instrument. Enabling **SUPERVISOR MODE** already requires entering the password.

5.1.2 Access levels

The Leica ASP300 S may be configured to allow two levels of user access.

"Operator" symbol



Operator access level:

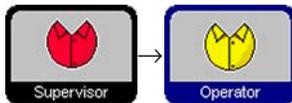
- Operators may run programs and view results. On this level, the **OPERATOR** symbol is displayed in the upper right corner of the touch screen; all enabled buttons are surrounded by a black border.

"Supervisor" symbol



Supervisor access level:

- Supervisors may perform all Operator functions, and additionally create programs and perform the instrument set up functions. At the Supervisor access level, a status line is added to the SMART SCREEN functions containing information on the retort and wax baths (see Fig. 48, page 49).
- To access Supervisor level, press **SUPERVISOR** enter the required password and confirm. When entering the password the **SUPERVISOR** symbol will be displayed instead of the **OPERATOR** symbol and all enabled buttons will be surrounded by a black border instead of a blue one.



Disabled - Default state of the instrument. All instrument and software functions of the ASP300 S are fully accessible to all staff.

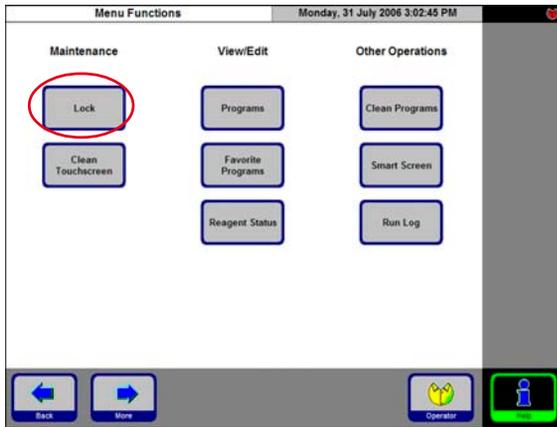
LOCK MODE:

Fig. 25

Enabled or Disabled

The Leica ASP300 S provides a feature called "Lock" to prevent access to any operations of the Leica ASP300 S to unauthorized users.

Enabled:

The LOCK button is enabled in the menu functions. To enable, a password has to be entered. When activated, **LOCK** prevents any user input, until after a password has been entered.

Disabled:

All functions can be accessed at any time until the screen saver turns off the screen.

Entry keyboard

The keyboard is displayed any time text needs to be entered.

- The keyboard headline (1) tells you what kind of text to enter.
- 30 characters can be entered into each entry field, though sometimes not all characters entered can be displayed.

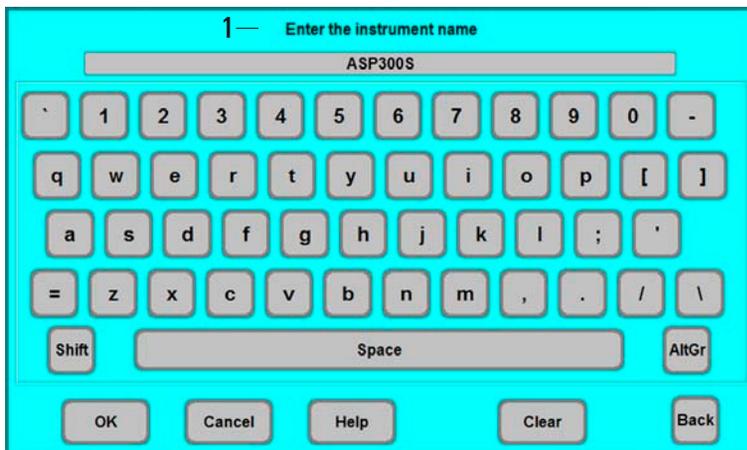


Fig. 26

Important keys**Shift :**

To shift to upper case symbols.

AltGr :

Permits the entry of special characters.

<— :

Deletes the previous character.

Delete :

Deletes the entire line.

5. Operation

5.1.3 INSTALLATION menu

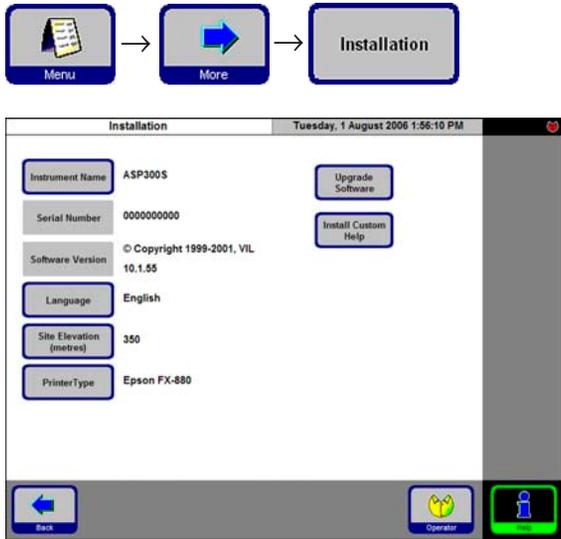


Fig. 27

Assigning an instrument name

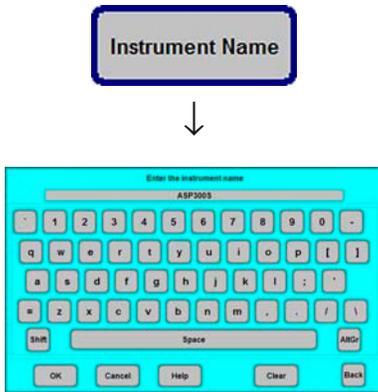


Fig. 28

Press **INSTRUMENT NAME** to display the keyboard.

Enter a name (20 characters maximum) for the instrument.

The instrument name is also displayed on the **FAVORITES** screen.

Use this menu to set the name of the instrument, the language of the user interface and configure a connected printer.

The serial number of the instrument and the current software version are entered at the factory and cannot be edited.

Selecting a language

Press **LANGUAGE** to open the **SELECT LANGUAGE** menu.

Select the desired language there and press **OK**.

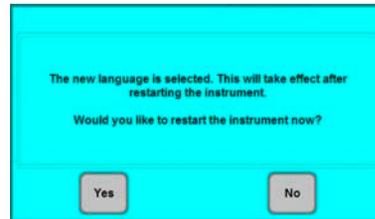
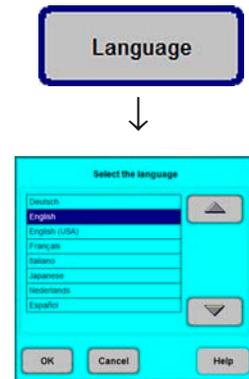


Fig. 29

A message box will prompt you to restart the instrument in order to display the user interface in the selected language. Press **YES** to restart the instrument and display the user interface in the new language.

Setting the altitude of the installation location (in meters above sea level)

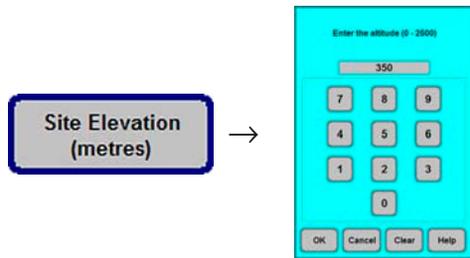


Fig. 30

This is important as it affects the actual pressure in the retort.

Press **SITE ELEVATION (metres)**, enter the value in the number field and press **OK**.

This parameter (in meters) must be entered to ensure that the ASP300 S makes the appropriate corrections when calculating the proper pressure or vacuum.

Updating software:

New versions of the ASP300 S operating software are provided on diskette. Such upgrades generally contain two to three diskettes.



Do not perform a software upgrade if you do not have all of the diskettes in the upgrade package.

Read the instructions in the upgrade pack with care, as they may contain additional version-specific information as well as new or modified procedures, parameters and data that must be loaded or modified to ensure that the new software version functions correctly.

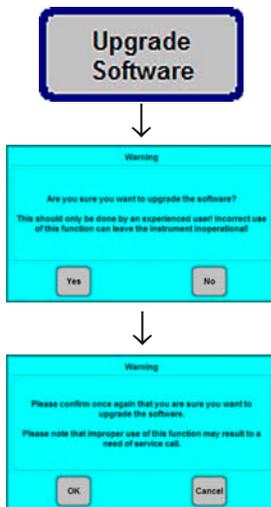


Fig. 31

1. Make a backup copy of the instrument's current data. You will need an empty, formatted diskette for this purpose.
2. Insert "Disk 1" (or similar) of the software upgrade into the diskette drive.
3. Press **UPDATE SOFTWARE**, dismiss the safety queries with **YES / OK** and follow the onscreen instructions. Insert "Disk 2" into the diskette drive when prompted. Continue with the remaining disks (if any).
4. When the update process is complete, the instrument's software will reboot – the screen will switch off and restart as it would when switching the instrument off and back on.

5. Operation

Configuring a printer

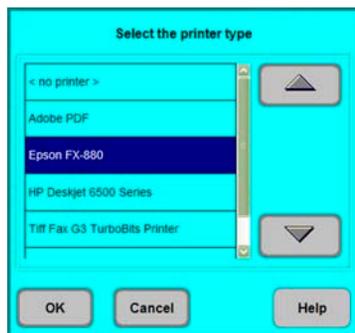
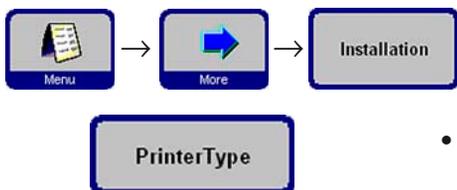


Fig. 32



Printing run logs

Printing is possible when the **PRINT** symbol is displayed.



For the PRINT symbol to be displayed, a printer must have been configured for the instrument.

The following lists and protocols can be printed:

- reagent list
- stations list
- reagent status list
- all programs
- run log
- error log

On the **INSTALLATION** screen press **PRINTER TYPE** to display the list of the printers that can be connected.

- The Leica ASP300S works with any printers that are compatible with commercial PC's.
- With a Centronics standard cable, connect the printer to the printer port. (See [chapter 4.4, Fig. 8](#))
- In the **SELECT THE PRINTER TYPE** window, highlight the printer that is connected to the instrument and press **OK**.



If the printer driver you connected is not listed, try a similar printer of the same manufacturer. If this approach does not work, call Leica Technical Service to have the required printer driver installed.

Installing custom help

See [chapter 5.6 "Online help"](#) on [page 59](#).

5.1.4 Editing the reagent list

Adding new reagents

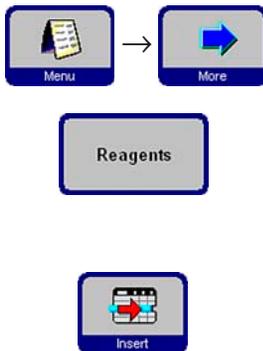
1. Enter the reagent name and allocate the new reagent to the reagent group it belongs to.
2. Define the stations (bottles) that will be filled with the new reagent.
3. Fill the stations (bottles) according to the reagent list.

Enter reagent names

Enter reagent names via the **REAGENTS** screen.

You must be logged on at supervisor access level to proceed.

- From the start screen, press **MENU** to go to the **MENU FUNCTIONS** screen, then press **MORE**.
- The **MORE MENU FUNCTIONS** screen will appear. Press **REAGENTS**.
- The **SET UP REAGENTS AND WARNING THRESHOLDS** screen opens.
- To add a reagent:
 - Press **INSERT** to display the keyboard.
 - Enter the new reagent name.
 - Press **OK** to confirm.
 - You will then automatically be prompted to select the reagent group:



Setup Reagents and Warning Thresholds								Monday, 31 July 2006 3:05:57 PM		
Name	Reagent Group	Blocks Until Change	Cycles Until Change	Days Until Change	Blocks Until Clean	Cycles Until Clean	Days Until Clean			
Alcoholic Formalin	Fixing	600	4	5						
Formalin	Fixing	600	4	5						
Neutral Buffered Formalin	Fixing	450	4	5						
Ethanol 50%	Dehydrating, diluted	450	4	5						
Ethanol 70%	Dehydrating, diluted	450	4	5						
Ethanol 90%	Dehydrating, diluted	600	4	5						
Ethanol/Xylene (50/50)	Dehydrating, diluted	600	4	5						
Alcohol	Dehydrating, absolute									
Ethanol Absolute	Dehydrating, absolute	450	3	5						
IMS	Dehydrating, absolute									
Isopropanol	Dehydrating, absolute									

Fig. 33

Select the reagent group

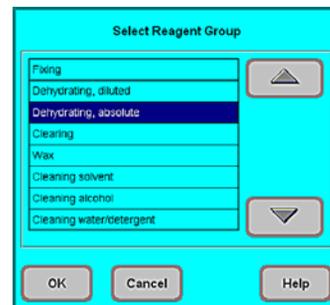


Fig. 34

Allocate the new reagent to the desired group and press **OK** to confirm.

5. Operation



Allocation of reagents to the correct reagent group is the basis for compatibility monitoring. Allocation to the wrong reagent group can lead to reagent cross contamination.

Changeable parameters

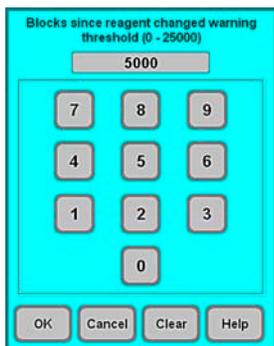


Fig. 35

Entering / modifying reagent thresholds

If warning thresholds are required for a certain reagent, enter them as follows:

- Highlight the reagent to be modified, either by pressing the reagent name or using the **UP/DOWN** buttons.
- Press the header of the parameter to be changed - the corresponding entry screen opens.
- Enter a new threshold or - if no warning is desired - press **CLEAR** to remove the threshold altogether.
- Press **OK** to confirm.



The respective threshold value applies for all reagent stations containing the same reagent.

Changing reagent names or reagent groups



If a reagent is already used in a program, it can neither be renamed nor can it be allocated to another reagent group! The corresponding symbols will be disabled (i.e. they will not be surrounded by a blue border). If a reagent is renamed, all stations and programs linked to that reagent need to be reedited as well!



Fig. 36

- Highlight the reagent the name or group of which you wish to change.
- Press the corresponding headline key symbol.
- In the entry window (or via the keyboard), enter the new reagent group allocation / the new reagent name.
- Press **OK** to save the new reagent group / reagent name.

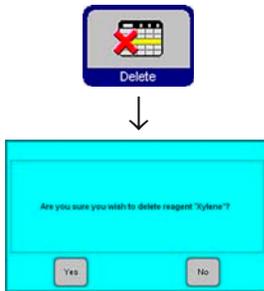


Fig. 37

Deleting reagents

- Highlight the reagent to be deleted in the **SET UP REAGENTS AND WARNING THRESHOLDS** screen.
- Press **DELETE**.
- Press **OK** in the screen to confirm the reagent is deleted.



Please remember that a reagent which is already used in a program cannot be deleted.

Adding new reagents to stations

Go to **SMART FUNCTIONS** to remote-fill the reagent bottle from an external bulk container

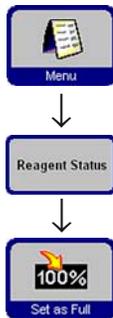
or

fill the reagent bottle manually.

After filling a bottle manually the bottle must be defined as full.

For that purpose:

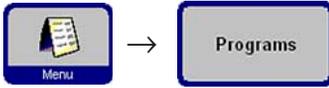
- Press **MENU** to access the **MENU FUNCTIONS** screen.
- Press **REAGENT STATUS**.
- In the reagent list, highlight the station/ reagent that has been filled manually.
- Press **SET AS FULL** to mark the station as "full".



Upon activation of the RMS all warning thresholds for the selected reagent are automatically reset to "0".

5. Operation

5.1.5 Viewing the program list



This list (Fig. 38) displays all programs currently existing in the ASP300 S.

The screenshot shows a software interface titled "View/Edit Programs" with a timestamp "Thursday, 20 July 2006 12:55:29 PM". It features a table with columns for "Number", "Program Name", and "Program Duration". To the right of the table are buttons for "Print", "Edit", and navigation arrows. At the bottom are buttons for "Back", "Copy", "Delete", "Operator", and "Info".

Number	Program Name	Program Duration
1	Routine Overnight	13:09
2	Routine Overnight RMS	13:57
3	High Priority	13:57
4	Small Biopsies	03:34
5	Brain	22:50
6	Urgent	01:55
	Rapid Cleaning program	01:08
	Standard Cleaning Program	01:40
	Extended Cleaning program	02:02
	Wax Clean Program	00:50

You can create:

- Up to 15 processing programs
- 3 retort cleaning programs
- 1 wax cleaning program.

At supervisor access level:

- the processing program names can be edited.
- new processing programs can be created and existing ones can be deleted.

Fig. 38



Important!

New processing programs are created by copying existing ones. Therefore, the list must contain at least one program at all times.

Program duration cannot be specified. – It is determined by the total duration of all program steps, plus the estimated fill and drain times. To alter the duration of a program, the duration of one or more individual program steps has to be modified.



Retort and wax cleaning programs are predefined. They cannot be renamed, added or deleted.

5.1.6 Adding and/or modifying programs



Fig. 39

Creating a new program

- Make sure you are logged on at supervisor level.
- In the **VIEW/EDIT PROGRAMS** screen (Fig. 38) highlight a program as similar as possible to the program you wish to create. (This minimizes the number of modification steps to be carried out).
- Press **COPY** to copy the selected program. The new program will have the same name as the program copied, however, the figure "(2)" will be added to indicate the change.
- Highlight the line containing the new program.
- Press **PROGRAM NAME** at the top of the table to display the keyboard.
- Enter the new program name.

Editing program steps

- Press **EDIT** (refer Fig. 38) to access the **PROGRAM STEPS** screen.
- In the headline you will find the **PROGRAM NAME**.
- The colors on the left border of the table indicate the reagent groups to which the reagents belong.
- The program steps are displayed in the order in which they are carried out. For each program, up to 13 steps can be defined.

The following characteristics of each program step can be edited:

- Reagent name.
- Duration of step
(with the exception of fill and drain steps).
- Retort temperature
(if "Ambient" is selected, the retort temperature indication remains empty).
- Type of pressure and/or vacuum cycle.
- Retort drain time.
- Delay step.



5. Operation

Editing program steps

- To edit a step, highlight the corresponding line and press the respective headline.
- In the entry windows that pop up enter / select the program step settings.

The main interface displays a table of program steps under the heading "3. High Priority" and the date/time "Thursday, 20 July 2006 1:00:55 PM". The table has columns for Reagent, Duration, Temp, P/V, Drain, and Delay. The first row is highlighted in red.

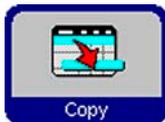
Reagent	Duration	Temp	P/V	Drain	Delay
Formalin	01:00		P/V	140	☹
Ethanol 90%	01:00		P/V	140	
Ethanol Absolute	01:00		P/V	140	
Ethanol Absolute	01:00		P/V	140	
Ethanol Absolute	01:00		P/V	140	
Ethanol Absolute	01:00		P/V	140	
Xylene	01:00		P/V	140	
Xylene	01:00		P/V	140	
Xylene	01:00		P/V	140	
Histowax	01:00	62	P/V	140	
Histowax	01:00	62	P/V	140	
Histowax	01:00	62	P/V	140	

Four editing windows are shown below the table, each corresponding to a column header:

- Reagent:** A window titled "Select Reagent" with a list of reagents: Formalin, 95% IMS, 70% IMS, ABS IMS, Xylene, Xylene 1, and Paraffin Wax. The "Formalin" option is selected.
- Duration:** A window titled "Enter the duration of the step (00:05 - 99:59)" with a numeric keypad and a display showing "01:00".
- Temp:** A window titled "Select the reagent temperature (Ambient, 35 - 55)" with a numeric keypad and a display showing "37".
- P/V:** A window titled "Select the cycle type" with a list of options: Pressure, Vacuum, Pressure/Vacuum Cycle (selected), and Ambient.
- Drain:** A window titled "Select the Drain Time" with a numeric keypad and a display showing "140".

Fig. 40

Editing program steps (continued)

**Setting a delay step**

A step that is nominated as a delay step, will be extended to ensure that a program will finish at a specified time ("Finish Time"). To set a delay step:

- Highlight the program step you wish to define as delay step.
- Press **DELAY**.

The delay symbol is moved to the selected step, thus defining the step as delay step.

Copying program steps

- Highlight the step you wish to copy.
- Press **COPY**.
- If required, modify properties of the step.



Remember that a program step cannot be copied if the program already contains the maximum number of 13 steps.

- Use the **MOVE UP / MOVE DOWN** buttons to move program steps up or down within an existing program without having to recreate those steps.

Deleting program steps

To delete a step from a program:

- Highlight the step you wish to delete.
- Press **DELETE**.



Remember that it is not possible to delete a step from a program containing only one single step. Programs must consist of at least one step.

5. Operation

5.1.7 Favorites

In the ASP300 S you can define up to five Favorites. Favorites can be programmed to end either

- "as soon as possible" (ASAP) or
- at a predetermined finish time.

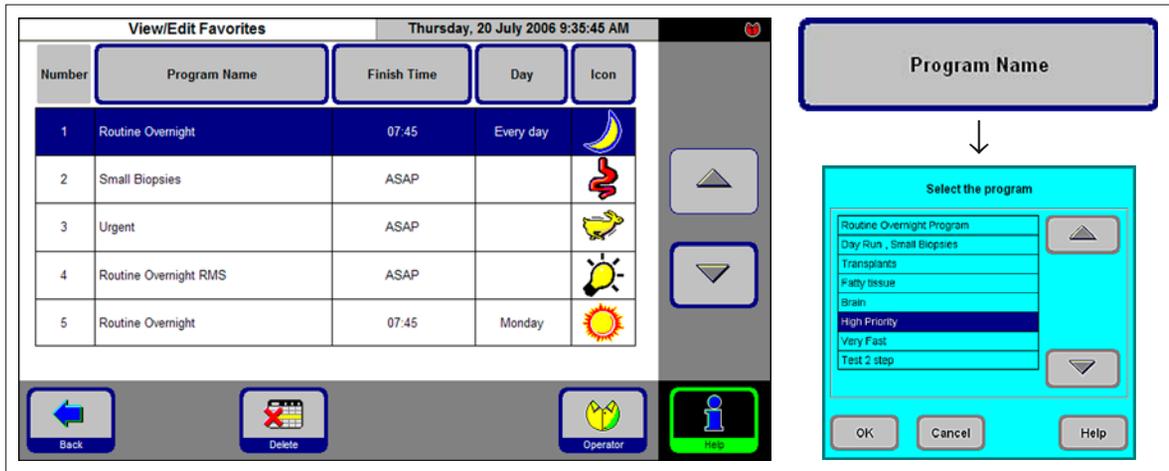


Fig. 41

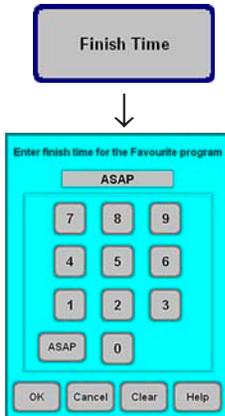


Fig. 42

Adding and/or modifying favorites

- Highlight the program line to be altered.
- Press **PROGRAM NAME**.
- Select the desired program and press **OK** to confirm.

Setting a finish time

- Press **FINISH TIME**.
- Enter the finish time (24-hour clock). Select **ASAP**, if the program finish time is not to be delayed.
- Press **OK** to confirm.



If a preprogrammed finish time is assigned to a favorite, a delay will automatically be inserted into the program at the nominated "Delay Step" to ensure that the program finishes at the preprogrammed time.



Fig. 43

Assigning a finish day

In addition to the finish time, you can also define a specific day of the week when a Favorite is to finish.

- Press **DAY**.
- Select the desired week day in the list and press **OK** to confirm.

Assigning a symbol to a "Favorite"

Assigning a specific symbol to a favorite makes it easy to recognize at any time.

- Press **ICON** in the table header.
- Select the desired symbol and press **OK** to confirm.

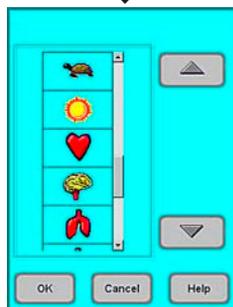


Fig. 44



The first symbol in the list is empty – select this option, if you do not want to assign a symbol to a specific program.

Deleting a "Favorite"

- Highlight the Favorite you wish to delete.
- Press **DELETE**. The Favorite is deleted without any further queries.



The "Favorite" is only deleted from the FAVORITES list. The program itself is not deleted.

5. Operation

5.1.8 Editing the stations



The list below (Fig. 45) shows all stations / allocated reagents currently defined in the instrument.

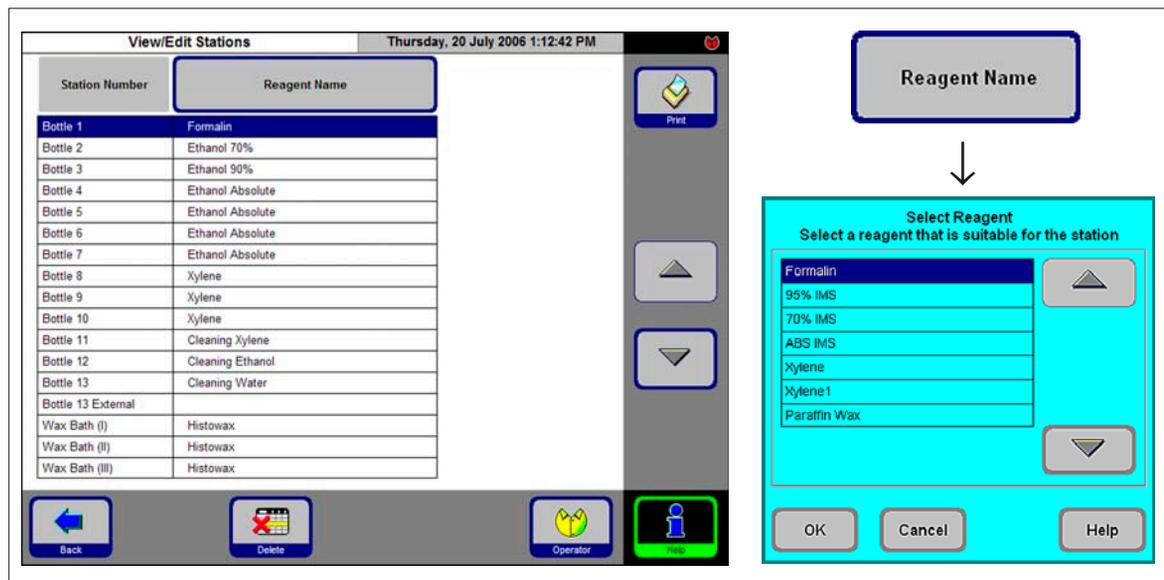


Fig. 45

Adding / changing reagents

Highlight the desired station, either by pressing the reagent name or using the UP/DOWN buttons.

- Press **REAGENT NAME**.
- The **SELECT REAGENT** entry window pops up.

i Only those reagents that are compatible with the respective station will be available for selection.

- Highlight the desired reagent and press **OK** to confirm.

Allocating reagents

- Only processing reagents (except paraffin) can be allocated to stations 1 – 10.
- Only a cleaning reagent can be allocated to station 11.
- Only a cleaning alcohol can be allocated to station 12.
- Only cleaning water/detergent can be allocated to stations 13 and 13-ext.
- Only paraffin wax can be allocated to the wax baths.

5.1.9 Reagent groups



In this screen (Fig. 46) you find the colors used for each reagent group in the graphic program display.

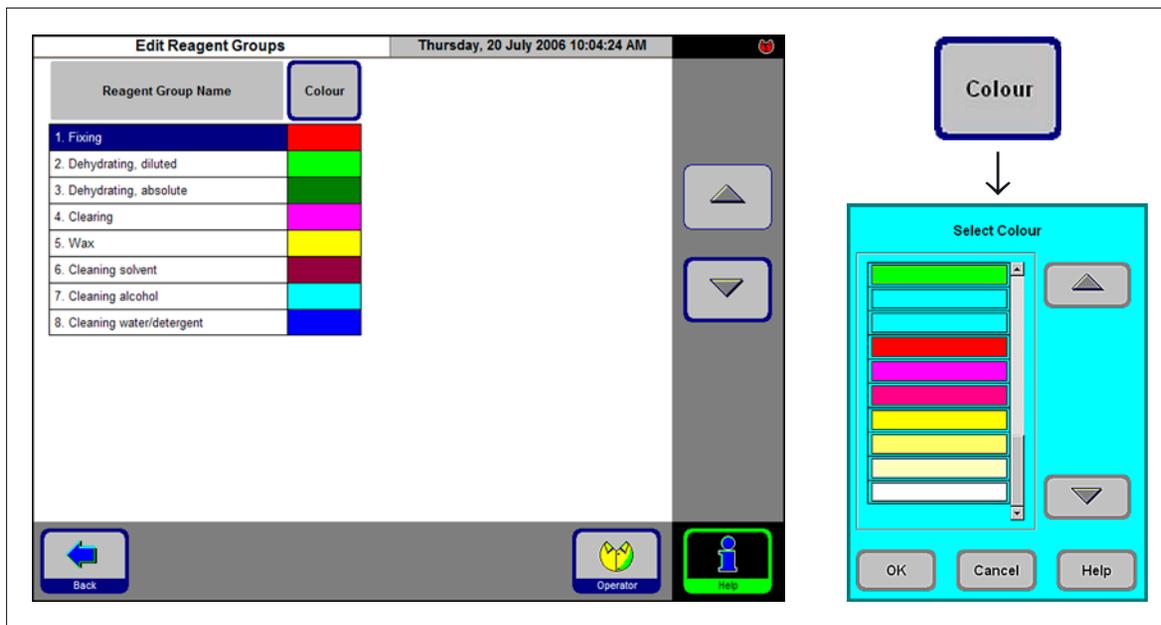


Fig. 46

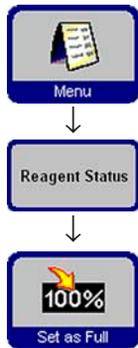
Selecting a new color for a reagent group

- Highlight the line containing the reagent color you wish to change.
- Press **COLOR** in the table header: the entry window **SELECT COLOR** pops up.
- Select the desired color and press **OK** to confirm.
- If you want to close the entry field without changing the color, press **CANCEL**.
- The new color will be used in all stations to symbolize the reagent group it has been allocated to.

5. Operation

5.2 Reagent handling

5.2.1 Fill/drain reagents (other than wax)



1. Manually changing the reagents

- Remove the appropriate reagent bottle from the reagent cabinet, remove the bottle screw cap.
- Drain/refill the reagent by pouring to/from a bulk container. Use the included funnel for clean filling.
- On the **REAGENT STATUS** screen, verify correct allocation and set the reagent bottle as full.

2. Use the "Remote Fill / Drain" features



Fig. 47

- Connect the supplied remote fill/drain hose to the remote drain connection (7) on the front of the instrument.
(refer Fig. 6, Chapter 4.3, page 22).



Important!

Ensure that the hose is pushed all of the way onto the connection, until a clear click is heard.

- Put the loose end of the remote fill/drain hose into the desired container for the drain/fill operation as desired.



While performing a reagent fill/drain, ensure that the remote fill/drain hose is securely placed in the remote container and is not removed from the container until the operation is fully completed as pressurized air is used to clear the hose after each fill / drain.

The hose should therefore not be removed from the bulk container until this cleaning step is complete.

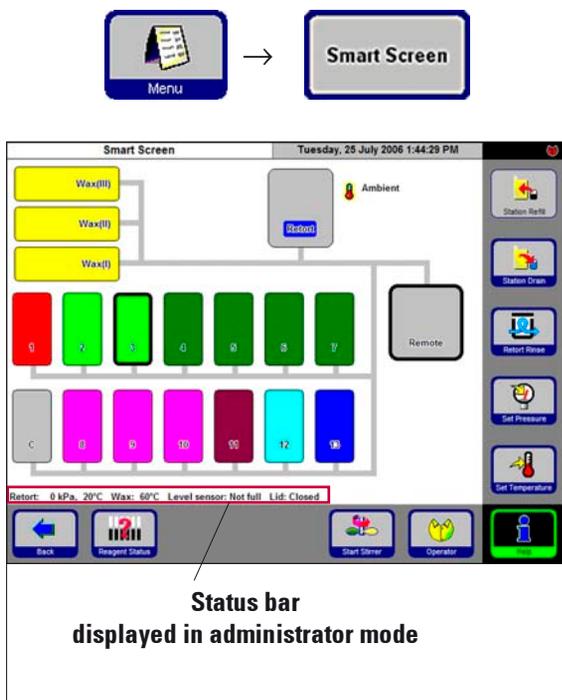


Fig. 48

Fill / drain reagents

In **FAVORITES** press **MENU**. In **MENU FUNCTIONS**, press **SMART SCREEN**.

The **SMART SCREEN** (Fig. 48) pops up. The smart screen is the initial screen for manual operation of the instrument.



The following steps should only be carried out by trained laboratory personnel, experienced in handling reagents.

Status bar

The following values are displayed:

- Retort temperature and pressure
- Wax bath temperature
- Value of the retort level sensor
- Retort lid – open or closed

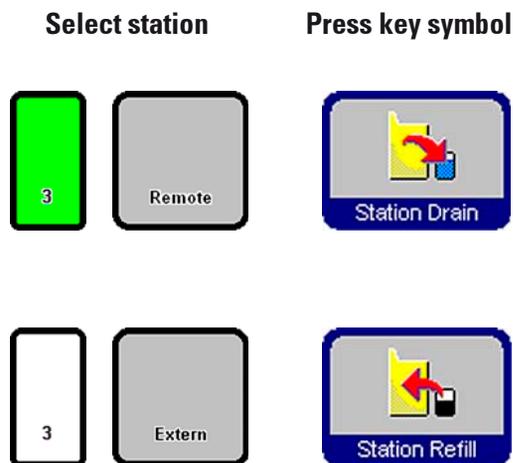


Fig. 49

Remote drain

- On the screen, select reagent bottle no. **3** and the bulk container (**Remote**). Then press **STATION DRAIN**.
- Make sure no reagent has been spilled.

Remote fill

- On the screen, select an empty reagent bottle (no. **3**) and the bulk container (**Remote**). Press **STATION REFILL**.
- The remote fill procedure should be completed in less than 170 seconds.
- Make sure no reagent has been spilled.

5. Operation

5.2.2 Changing the wax

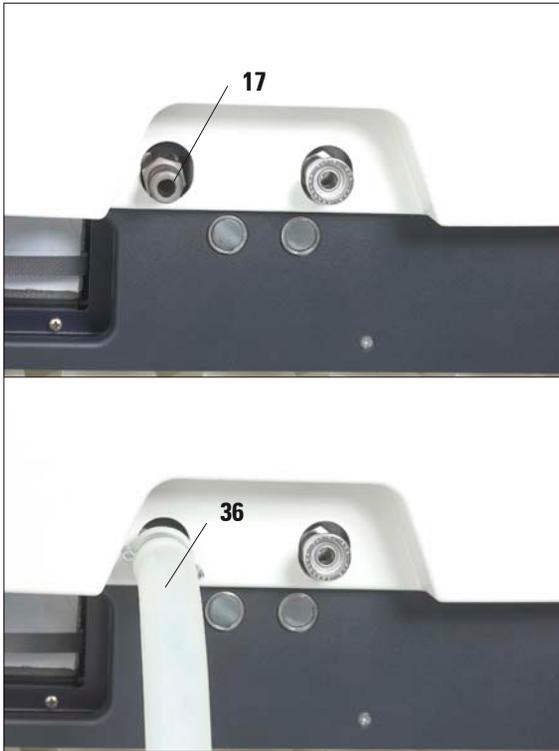


Fig. 50

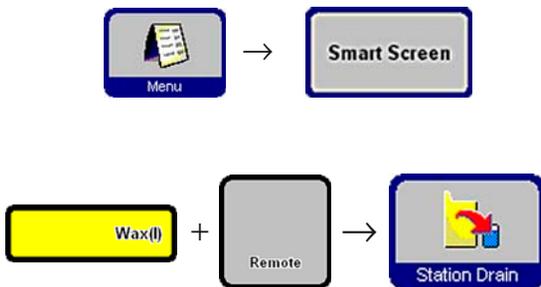


Fig. 51

Draining the wax

- Connect the paraffin drain hose (36) to the wax drain connection (17) on the front of the instrument (Fig. 50) and insert the loose end of the hose into a collecting container.



Make sure that the hose is pushed all of the way onto the O-rings of the wax drain connection.

While performing a paraffin drain, ensure that the paraffin drain hose is securely placed in the remote container and is kept in place until the completion of the operation, as the hose is automatically purged with air upon completion of the drain.

The hose should therefore not be removed from the remote container until this cleaning step is complete.

In the **FAVORITES** screen press **SMART SCREEN** (see previous chapter).

- Select the wax bath to be drained and the remote container ("Remote", Fig. 51). Then press **STATION DRAIN**.
- Several safety queries will be displayed, each of which has to be confirmed individually in order to continue.

Filling with wax pellets

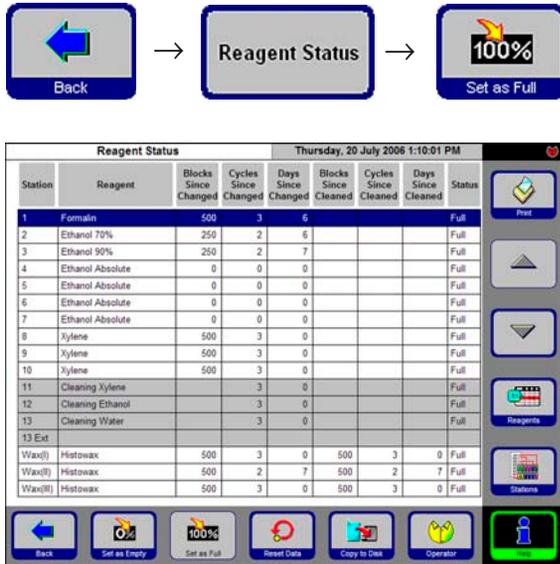


Fig. 52



Fig. 53

- Fill the wax bath with wax pellets up to the maximum level line (1 in Fig. 53). This requires approx. 3.5 kg pellets per wax bath (Leica pellets).
- Press **BACK** and **REAGENT STATUS** to access the reagent status table (Fig. 52). Highlight the wax bath you just filled and press **SET AS FULL**.
- After about 90 minutes, add another 0.5 kg of wax pellets.
- Do not insert the splash protector during the heating phase.
- The pellets will take a total of approx. 10 hours to melt.



Important!

During the melting process, the paraffin level may **NOT** drop below the **MIN** level (pos. 2, Fig. 53).

- Once the paraffin is completely molten, reinsert the splash protector.

Software control

- Paraffin pellets have to be completely molten before the ASP300 S allows any programs to be run.

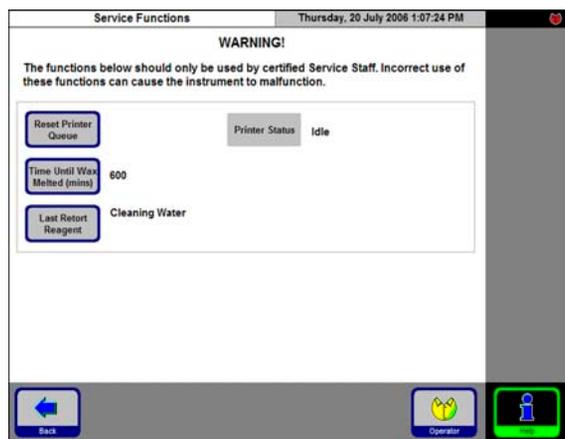
The instrument software calculates when the wax will be ready for use and selects program starting times accordingly, i.e. the paraffin will definitely be molten when it is required for the first paraffin step.

5. Operation

Adding molten paraffin

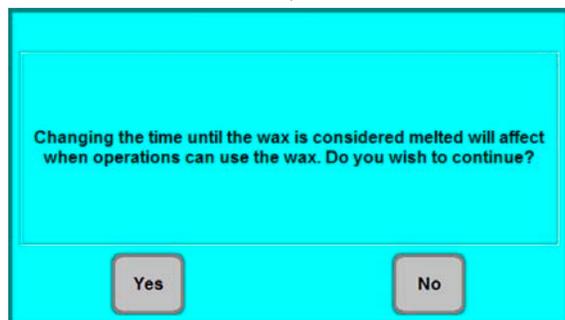


To avoid damage to the thermal fuse, molten wax that is added to the wax baths may have a maximum temperature of 70 °C.



Time Until Wax Melted (mins)

Fig. 54



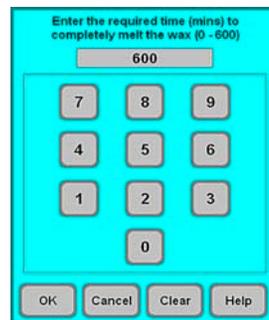
- If filling with molten wax, do not fill above the **MAX** level (see Fig. 53) on the wall of the wax baths.
- After a wax bath has been filled, it must be marked as "full" in the **REAGENT STATUS** screen.

Software control



If the wax baths are filled with molten wax, it is possible to override the melting time calculation.

In administrator mode, open **SERVICE FUNCTIONS** (Fig. 54). Press **TIME UNTIL WAX MELTED**.



A safety query will be displayed. Dismiss it with **YES**. Enter the desired delay in the time screen and press **OK**.

Fig. 55



Only change the melting time if you are absolutely certain that the new time entered is correct. If the instrument attempts a paraffin step with the paraffin only partly molten, severe instrument malfunctions may occur.

5.3 Running programs

Programs can be started from two different screens:

FAVORITES



Fig. 56

ALL PROGRAMS

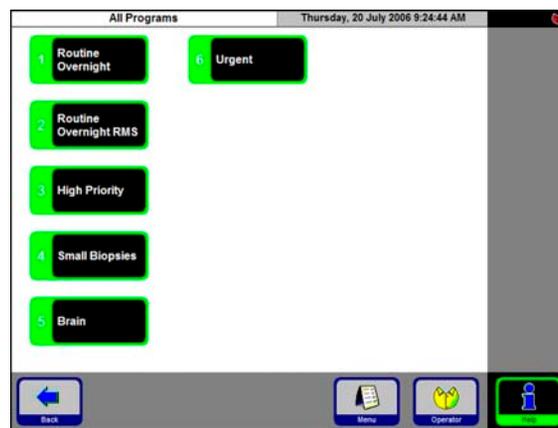


Fig. 57

In the ASP300 S you can define up to five Favorites. A "Favorite" is a processing program that is frequently used and therefore allocated to the FAVORITES list.

All settings are already programmed. Only the number of blocks has to be entered (if this function is enabled).

Starting a "Favorite"

To start a Favorite, press the corresponding symbol on the Favorites screen - the program will be started immediately.

After the program has been started, its finish time and/or other program parameters can still be changed as with any other program.



In the Favorites screen, press **ALL PROGRAMS** to access the All Programs screen, where all existing processing programs are displayed.

- Press the symbol corresponding to the program you wish to start.
- A graphic representation of the stations / retort will be displayed. The stations required for the program you are about to start will be colored in the corresponding reagent group colors (Fig. 58).
- Unlike the Favorites, regular programs can be modified before being started. However, any processing step modifications that are made only apply to the program that has just been selected.

5. Operation

5.3.1 Editing a selected program

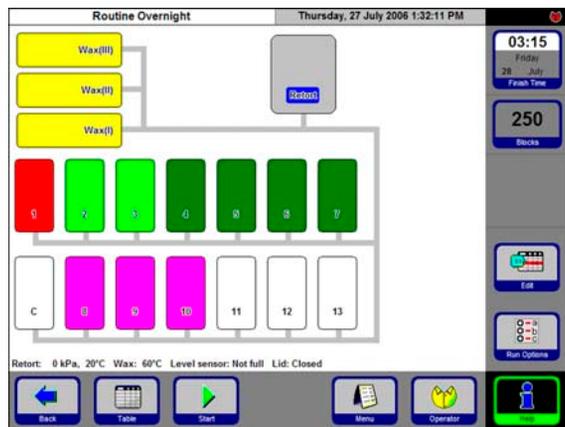


Fig. 58

To modify a program before running it, press **EDIT**. A message will be displayed indicating that the changes will only affect the currently running program. Dismiss the message with **YES** and the program editing screen will open (Fig. 59).

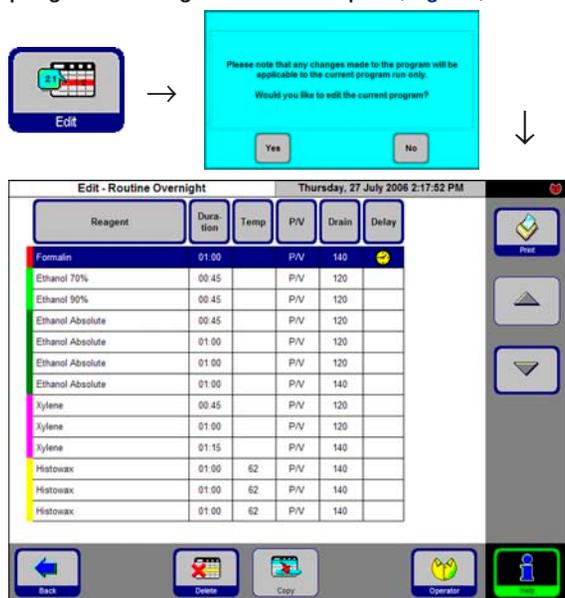


Fig. 59

Redefine the program finish time:

- Press **FINISH TIME**. In the entry window, set a new finish time.

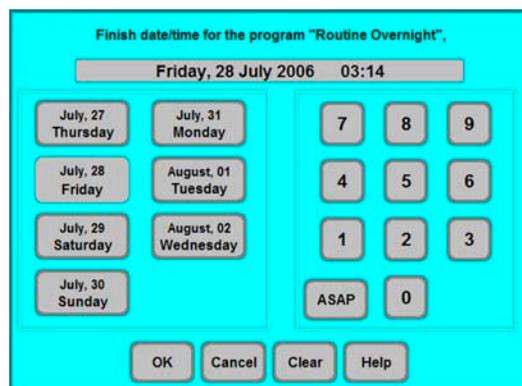


Fig. 60

- Enter the day of the week when you want the program to be finished.
- Enter the time (in 24-hour clock) when you want the program to be finished.
- Press **OK** to confirm.



Programs can be started up to 6 days in advance. For the program to finish at a specific date/time, the delay step will be prolonged accordingly.

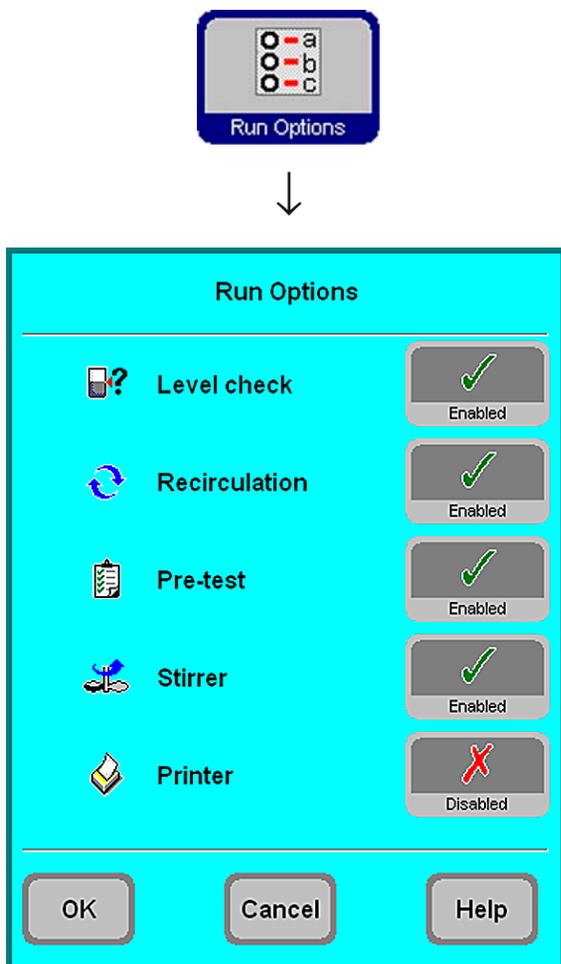


Fig. 61

Access the **RUN OPTIONS** function to display the options selected for the current program.

- **LEVEL CHECK** enabled:
The lower level sensor in the retort is activated. The program will be stopped and an error message will be displayed when the level is not reached.
- **RECIRCULATION** enabled:
During each processing step, the reagent is pumped periodically from the bottle to the retort and back for continuous and efficient mixing of fluid. The first pump step is carried out after 16 minutes, all subsequent pump steps in 12-minute intervals.
- **PRE-TEST** enabled:
After starting the program, the first reagent is pumped into the retort and back into the bottle, to verify whether all tubes and valves are unobstructed.
- **STIRRER** enabled:
Magnetic stirrer is **ON**.
- **PRINTER** if enabled:
At the end of the program run, a full run log will be printed out.



Important!

The options selected will be applied to **ALL** programs!
All run options can be enabled / disabled during the program run, if necessary.

The printer option will be displayed only, if a printer has been configured for the instrument.

5. Operation

5.3.2 Starting a program

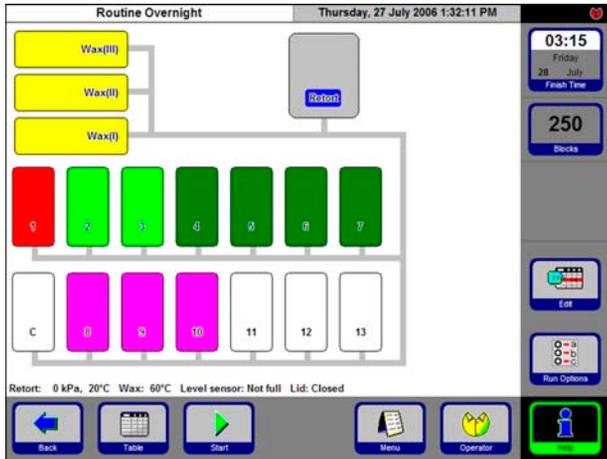


Fig. 62

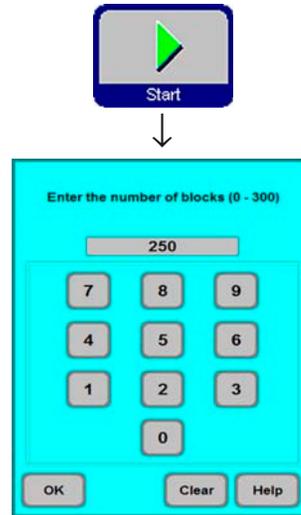
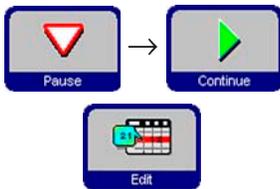


Fig. 63

- Press **START** to start the program. Press **OK** to confirm the query that follows. The **NUMBER OF BLOCKS** must be entered if RMS has been enabled.



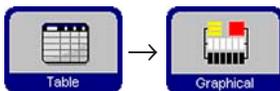
- The **FINISH TIME** button shows the time, when the current program will be finished. If anything occurs that delays the finish time, the finish time indication will be updated accordingly.



- Before a program in progress can be modified, the **PAUSE** symbol must be pressed. After pressing **PAUSE**, all buttons surrounded by a blue border can be accessed / edited. To modify or delete program steps, press **EDIT** and, in the entry window, carry out any changes you wish to make. Press **CONTINUE** to restart the program.

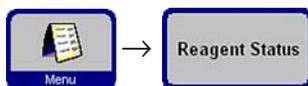


The finish time of a program in progress can only be changed as long as the delay step has not yet been completed.



- Press **TABLE** to change from graphic to tabular program display, press **GRAPHICAL** to go back to graphic display.

5.4 Reagent status



In the reagent status screen (Fig. 64) you can display and update the actual reagent status of each station and you can set the stations as full or empty.

Reagent Status								Monday, 31 July 2006 1:26:28 PM	
Station	Reagent	Blocks Since Changed	Cycles Since Changed	Days Since Changed	Blocks Since Cleaned	Cycles Since Cleaned	Days Since Cleaned	Status	
1	Formalin	500	3	5				Full	Print
2	Ethanol 70%	250	2	5				Full	▲
3	Ethanol 90%	250	2	4				Full	▼
4	Ethanol Absolute	0	0					Full	Reagents
5	Ethanol Absolute	0	0					Full	Stations
6	Ethanol Absolute	0	0					Full	
7	Ethanol Absolute	0	0					Full	
8	Xylene	500	3					Full	
9	Xylene	500	3					Full	
10	Xylene	500	3					Full	
11	Cleaning Xylene		3					Full	
12	Cleaning Ethanol		3					Full	
13	Cleaning Water		3					Full	
13 Ext									
Wax(I)	Histowax	500	3	11	500	3	11	Full	
Wax(II)	Histowax	500	2	4	500	2	4	Full	
Wax(III)	Histowax	500	3	11	500	3	11	Full	

The following parameters are displayed:

- Age of reagent
- Status of each reagent station.
- Warning thresholds that trigger warning messages. (red fields).

To change a reagent status, highlight the corresponding line and press the desired key symbol.

In addition, you can go directly to the **REAGENT** and **STATIONS** screens to make changes there.

Fig. 64

Reagent warnings

If the RMS is enabled, the instrument will give you warning messages when reagents have been used for too long.

Warning messages for normal reagents are given based on up to 3 criteria; warning messages for paraffin wax on up to 6 criteria.

The warning messages are displayed at the end of a cleaning cycle. From there, you can go directly to the **REAGENT STATUS** screen.

In addition, warning messages (on a yellow background) are displayed in the program start screens.

Criteria for warning messages

For normal reagents, the following warning criteria apply:

- number of blocks processed
- number of programs carried out
- number of days lapsed

For paraffin wax, three additional criteria can be applied:

- number of blocks processed
- number of programs carried out
- number of days lapsed since the wax has last been cleaned.

5. Operation

5.5 System Monitor



The **SYSTEM MONITOR** screen supplies important information on the Leica ASP300 S system status.

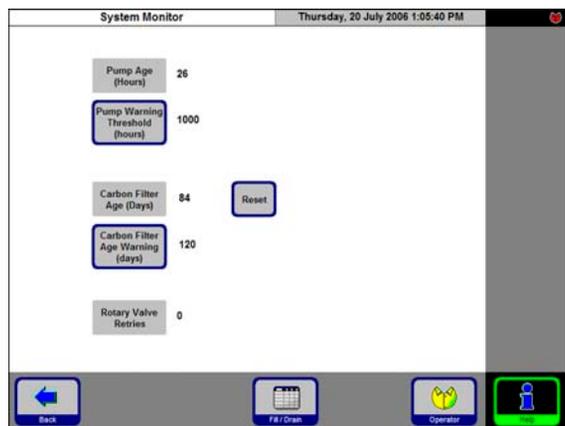


Fig. 65



After replacing the filter press **RESET** to reset the filter age to "0".

ROTARY VALVE RETRIES:

Provides information on the rotary valve status. If the figure indicated is higher than 50, a preventive maintenance is recommended.

PUMP AGE:

Indication of hours of service of the pressure/vacuum pump. A warning message is displayed according to the warning threshold set. After approx. 1,000 hours of use, have Leica Technical Service carry out a preventive maintenance of the pump.

CARBON FILTER AGE:

Indication of hours of service of the activated carbon filter. A warning message is displayed according to the warning threshold set. The carbon filter must be exchanged after approx. 3 months of use.

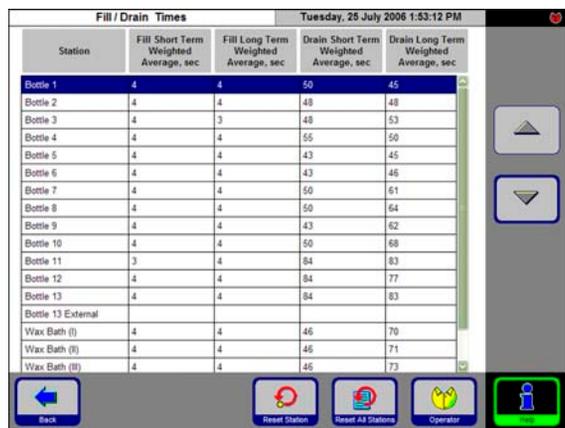


Fig. 66

FILL/DRAIN:



This screen displays the average fill / drain times of all stations (in seconds).

short term = average duration of last 5 fills / drains

long term = average duration of last 20 fills / drains.

In general, these values tend to differ slightly, however, there should not be any extreme differences. If one of the figures displayed exceeds 250, call Leica Technical Service.

There might be an obstruction which could cause an instrument malfunction.

5.6 On-line help



The Leica ASP300 S contains an on-line help feature, accessible from any of the principal screens.

For information on basic problems refer to the Help Index which can be accessed by pressing **INDEX** on the Help screen.

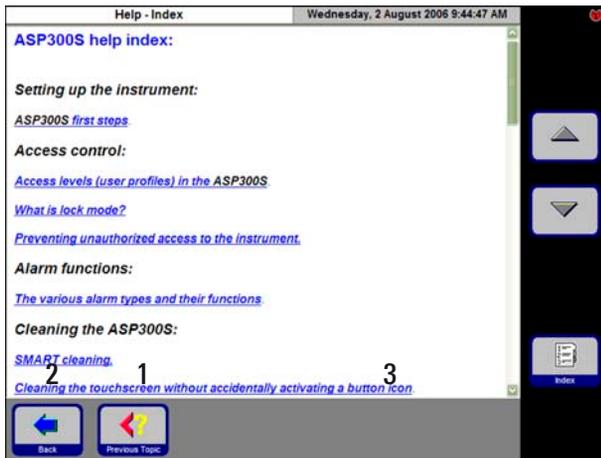


Fig. 67



The index lists all help topics in hyperlink format.

Use the **UP/DOWN** arrows to scroll.



Press the **PREVIOUS TOPIC** button (1) to return from a specific topic to the index.

Press **BACK** (2) to go back to the screen from where you accessed Help.

The **CUSTOM HELP** button (3) will only be displayed, if user-specific help files have been installed.

Detailed information on how to create and install customer-specific help files can be found in the "What is Custom Help?" help text.



In addition to the Help Index there are context-specific help texts. These texts are displayed only when Help is accessed from a screen where a specific problem has occurred.

Accessing "Help" in case of error messages

To access Help when an error message is displayed:

- press **DETAILS** or
- press the **HELP** button on the error message to obtain information on what has caused the error.

6. Solutions

6.1 General

The Leica ASP300 S is equipped with a state-of-the-art troubleshooting system.

If an error is detected, detailed error messages and corresponding user instructions on what to do are displayed on the touch screen.



For all errors, the instrument will take corrective actions to protect the specimens unless an unsafe operating condition exists.



- Details of all events are recorded in "Run Log". These events can be viewed by pressing **MENU** and then **RUN LOG**.

6.2 Power failure

Power failure during a processing program

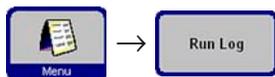
- If a power failure occurs during a processing program, the Leica ASP300 S counts the time during as contributing to the step duration, i.e. the step is not prolonged by the power failure.
- The Leica ASP300 S does not however, reduce the duration of subsequent steps should the power fail duration exceed the duration of the step in which the power failure occurred.
- If the power failure has been long enough that the wax temperature may have dropped below a level suitable for using in the program, the Leica ASP300 S will introduce a delay into the program before the wax step in order to ensure that the wax is sufficiently melted.

Power failure during a paraffin or retort clean cycle

- If a power failure occurs during a retort or paraffin clean cycle, the total duration of the clean cycle will be extended by the power failure, to ensure that the effectiveness of the clean is not compromised.

6.3 Troubleshooting

When a problem occurs in the Leica ASP300 S, take the following steps to diagnose the problem:



- Check for error messages indicating the nature of the problem.
- If an error message is displayed, press the Help button on the message for any information relating to the cause.
- Check the Run Log for any messages that indicate the nature of the failure. If the failure occurred during a program run, check the Run Log for an indication of whether the failure occurred during the fill, processing or drain cycles, and the reagent station in use at the time.



Use the SMART SCREEN functions to individually test operations such as fill, drain, pressurizing and evacuation operations.

Power failure

If there is evidence of power to the instrument:

- Verify that the mains lead is plugged in to the wall socket, and that the wall socket is switched **ON**.
- Check whether the bridge cable is plugged in properly.
- Verify that the power switches on the rear of the instrument (adjacent to the power lead), and on the side of the instrument are both switched **ON**.
- Messages indicating that there has been a partial power failure indicate that power has been lost to the heaters, but not to the main control electronics. Carry out the above steps to identify the nature of the problem.



If you cannot identify the problem by carrying out the above listed steps, call Leica Technical Service.

6. Solutions

6.4 Typical fill or drain problems

Fill and drain problems may be due to several causes:

1. There is insufficient reagent

- Verify that both the reagent bottles and the wax stations have sufficient reagent.

2. Insufficient pressure or vacuum

The Leica ASP300S is unable to create sufficient vacuum (for a fill) or pressure (for a drain) in the retort.

- Verify that the reagent bottle in question is correctly inserted in the reagent cabinet.
- Verify that all reagent bottles are fully pushed home into their sockets.
- Check whether there is some debris under the retort lid seal causing a leak.

3. There is a blockage in the air or reagent lines

Blockages in the reagent lines are typically caused by wax or tissue debris. If there is reagent in the retort that cannot be drained, try to remove the blockage as follows:

- Heat the retort to the maximum possible temperature (consistent with the reagent currently in the retort, if any). Leave the retort at this temperature for at least 15 minutes.
- Whilst the retort is at maximum temperature, attempt to fill or drain.
- If there is no reagent in the retort:
Run the extended retort clean program. Use the maximum settings for number of clean cycles and temperature (consistent with the type of reagents/solvents used in the clean program).



If you cannot eliminate the problem by carrying out the above listed steps, call Leica Technical Service before attempting to run any further programs.

7.1 Clean programs



You find the clean programs at the end of the programs list (Fig. 38, page 40). To display a clean program, highlight the respective line and press **EDIT**.



The ASP300 S offers three retort clean programs and one paraffin clean program. Clean programs cannot be copied or deleted.

7.1.1 Retort clean programs

3. Extended Cleaning program				Thursday, 20 July 2006 1:14:44 PM	
Reagent	Number of Cycles	Duration	Temp		
Cleaning Xylene	9	00:48	65		
Cleaning Ethanol	6	00:42	65		
Detergent	3	00:16	65		
Cleaning Water	3	00:16	65		

A clean program comprises a minimum of three and a maximum of four steps:

1. Cleaning Solvent
1 step from station 11
2. Cleaning Alcohol
1 step from station 12
3. Cleaning Water
1 step from station 13

Optional step between steps 2 and 3:

Cleaning Water / Detergent
1 step from station 13-ext.

Fig. 68

- The steps of retort clean programs are listed in the order in which they are carried out (fig. 68).
- The clean programs skip any steps not required to complete the clean. If, e.g. an infiltration program has been aborted during the alcohol step, the subsequent clean program will skip the cleaning solvent step and will start with the cleaning alcohol step.

7. Cleaning and Maintenance

Editing steps

- To edit a program step highlight the corresponding line and press the respective table header.
- To disable a step, set the number of cycles to "0". Only cleaning water steps can be disabled.

The following characteristics of each step can be edited:

- **Reagent name** - only those reagents that are compatible with the reagent station being edited will be displayed.
- **Number of cycles** - the duration displayed is calculated based on the number of cycles.
- **Retort temperature** - temperatures from 50 to 65 °C can be set.



The finish times of clean programs cannot be edited. Program duration is calculated automatically based on the number of cycles set.

Station 13-ext

- The term "13-ext" stands for an additional station which can be used instead of station 13.
- Station 13 always contains cleaning water. Some applications require the use of a cleaning water / detergent mixture between the cleaning alcohol and the cleaning water step.
- If a program contains a "13-ext" step, the operator is prompted to insert bottle "13-ext" when needed and to remove the bottle as soon as the step has been completed.



Only reagents belonging to the cleaning water group can be allocated to station 13-ext. Station 13-ext may be used for clean programs only.

7.1.2 Wax clean program

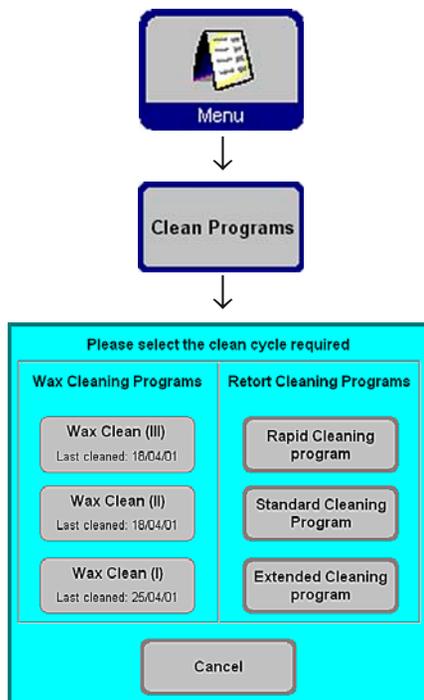


Fig. 69

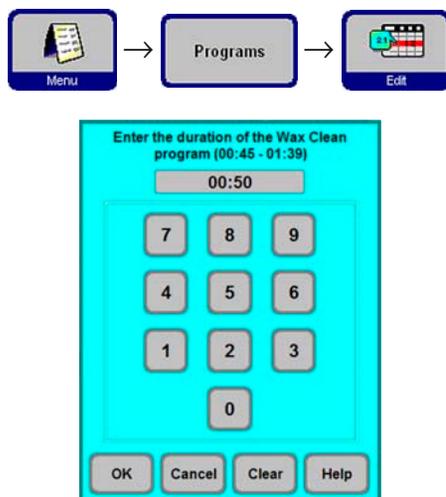


Fig. 70

The Leica ASP300 S contains a wax clean feature that removes xylene from used wax.

On the **CLEAN PROGRAMS** screen select the wax bath symbol corresponding to the wax bath the content of which you wish to clean.

In the event that the last reagent in the retort was not compatible with paraffin, run a retort clean before starting the paraffin clean.

A paraffin clean consists of the following steps:

- The paraffin is transferred into the retort.
- In the retort, the paraffin is heated to the maximum temperature.
- The retort is evacuated to draw off the xylene vapor.

The duration of the wax clean program is programmable:

For that purpose:

- On the View/Edit Programs screen, highlight the wax clean program and press **EDIT**.
- Enter the desired duration.
We recommend a duration of one hour.
- Press **OK** to confirm.

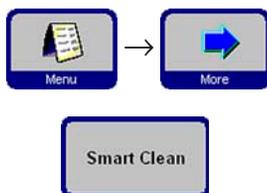
7. Cleaning and Maintenance

7.1.3 Smart Clean

The smart clean prepares the ASP300 S for transport. During a smart clean, a series of air cleaning steps will be applied which will remove any excess liquid (condensate) from all internal tubing.

Prior to starting a smart clean, a complete retort clean program must be run.

To start a smart clean, press the **SMART CLEAN** button on the **MORE MENU FUNCTIONS** screen and press **OK** to confirm.



The smart clean itself takes approx. 15 minutes and consists of 3 phases:

Phase 1:

Prior to starting the smart clean make sure all reagent containers are correctly inserted and connected.

All internal tubing is cleaned with pressurized air to force any remaining reagents back into the reagent bottles.

Phase 2:

Before phase 2 starts, the operator is prompted to remove all reagent bottles from the instrument.

All internal tubing is again cleaned with pressurized air.

Phase 3

Before phase 3 starts, the operator is prompted to insert an empty bottle into station 11.

The tubing is cleaned with pressurized air for the third time - remaining rests of reagents, if any, are forced back into station 11.



Empty and clean all reagent bottles thoroughly before reinserting them into the instrument to make sure there will be no reagent spills from the bottles that could cause damage during transport.

7.2 General cleaning steps

Paraffin wax baths



Warning! Be careful as the walls of the wax baths are very hot and may cause burns!

- Wipe the wax baths and lids clean.
The lid can be removed for cleaning purposes.
- If they are dirty, remove the wax strainers from the wax baths. Clean, dry and reinsert them.
- Ensure that the air vent hole at the top rear right hand corner is unobstructed.

Instrument exterior

Clean the instrument exterior as necessary. Wipe with a damp cloth moistened with mild detergent and dry.



Do not use solvents on painted surfaces and/or the touch screen!

Checking the drip tray

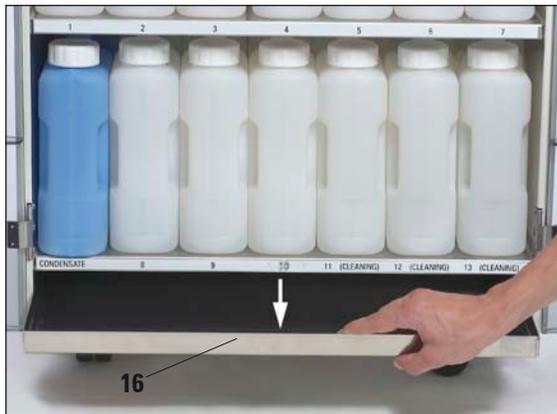


Fig. 71

Regularly check the drip tray (16) for spilled reagents.
(Fig. 71)

7. Cleaning and Maintenance

Draining the condensate bottle



Fig. 72

- Remove and empty the blue condensate bottle and reinsert (Fig. 72).



Dispose of waste solvents with care according to local regulations and the waste management policy of the company or institution.

Exchanging the activated carbon filter

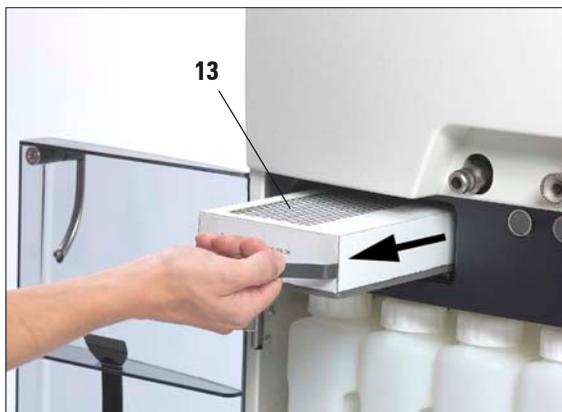


Fig. 73

Filter label



- The life of the carbon filter cartridge (13) will depend on the reagent types used and the frequency of vacuum cycles (which expel air from the instrument through the filter).
- In general, carbon filter cartridges should be replaced after approx. 3 months. (Fig. 73) After replacing the filter press open the menu **SMART MONITOR** to reset the filter age to "0". See also chapter 5.5.
- Prior to changing the filter we recommend a smart clean.



When inserting the new carbon filter, make sure the arrow on the filter label points up.

7.2.1 Daily cleaning and maintenance

Cleaning the retort lid

- Remove wax from the inside of the retort lid and from around the retort lid seal with the plastic scraper provided. Thoroughly remove all wax deposits from around the lid seal.
- For convenience, the lid may be removed during cleaning. Lift the lid to a vertical position, release the hinge lock and pull the lid toward you.



Only use the plastic scraper provided when cleaning the retort lid and seal to avoid damage to the retort lid seal and to the PTFE coating on the retort lid. Do not damage the edges of the seal with the scraper.

Cleaning the retort

- The retort may be wiped clean using a cloth moistened with solvent (xylene or alcohol) or mild detergent. Ensure that the air holes at the top front of the retort are open.

Cleaning the retort strainer

- Use alcohol or xylene to clean the strainer located at the bottom of the retort. For convenience, the strainer may be taken out to remove all solid dirt.

Cleaning the touch screen

- On the **MENU FUNCTIONS** screen press **CLEAN TOUCH SCREEN**.
- Clean the touchscreen.
- Press **ENABLE EXIT** to enable the **BACK** key symbol. Press **BACK** to return to **MENU FUNCTIONS**.

7. Cleaning and Maintenance

Cleaning the processor module top surface

To ensure proper sealing of the lids at all times it is important that you:

- remove both lids for cleaning
- first scrape the stainless steel surface with the plastic scraper and then wipe down to remove all solid matter around the retort and paraffin wax stations.

Reagent and condensate bottle seal lubrication

- To ensure easy removal of the reagent and condensate bottles, lubricate the O-ring seals on the plug-in nozzles with the O-ring lubricant supplied.



This procedure is particularly important with bottles containing chloroform. O-rings that have not been lubricated swell when exposed to chloroform. The reagent bottles can then become very difficult to remove.

Checking the retort lid seal

- Regularly check the retort lid seal for damage. If the seal is damaged, it must be replaced without delay.

7.2.2 Periodic cleaning and maintenance

Cleaning the reagent bottles

- Empty and clean the reagent bottles using a bottle brush and a laboratory detergent in warm water.



Never clean reagent bottles in an automatic dishwasher. The reagent bottles are NOT dishwasher-proof!

- Refill and reconnect the bottles once cleaned.
Make sure the bottle lids are tight and the bottles are properly seated in their home position at the rear of the reagent cabinet.



The reagent bottles must be properly engaged in the home position in the connection manifolds at the rear inner wall of the reagent module. Failure to correctly plug reagent bottles into the manifold will cause an interruption to the processing run and may result in spilling of reagents.

- While the reagent bottles are outside of the reagent cabinet, wipe the stainless steel inner walls of the reagent cabinet with a damp cloth moistened with a mild detergent.

For further periodic cleaning and maintenance steps, refer to the maintenance schedule on the following pages.

7. Cleaning and Maintenance

7.3 Preventative maintenance schedule

Maintenance activity	daily	weekly	monthly	every 3 months
Lubricate reagent bottle "O" rings and check for damage.		√		√ * * by using the remote fill/drain system.
Wipe dry retort and lid after completing retort clean cycle.	√			
Clean exterior of instrument with soft cloth and minimal amount of xylene.	√			
Check retort filter screen for tissue or wax residue.	√			
Remove residual paraffin from inner surface of wax bath lid.	√			
Inspect and, if necessary, clean retort lid seal.		√		
Inspect and, if necessary, clean wax bath lid seal.		√		
Inspect and, if necessary, adjust paraffin levels	√			
Inspect reagent container levels.	√			

7. Cleaning and Maintenance

Maintenance activity	daily	weekly	monthly	every 3 months
Inspect and, if necessary, clean wax bath strainers.		√		
Inspect wax bath air vent and, if necessary, clear.		√		
Inspect and empty condensate bottle. Clear inlet holes if necessary.		√		
Examine activated carbon filter.			√	
Replace carbon filter.				√
Check fluid level sensors and clean if necessary.	√			
Inspect electrical connectors at the rear panel of the instrument.			√	
Inspect and, if necessary, clean inside reagent bottles.			√	
Check that the bottle caps and seals of the reagent bottles are in place and tight.			√	
Check that the reagent bottles are fully inserted in the connection manifolds.	√			

8. Warranty and Service

Warranty

Leica Microsystems Nussloch GmbH guarantees that the delivered contract product has been subjected to comprehensive quality control measures in accordance with Leica's internal testing standards. The product does not have any defects and meets all stipulated technical specifications and/or has all agreed properties.

The scope of warranty depends on the contents of the individual contract concluded. The terms of warranty of the Leica sales organization or other organization from which the contract product was purchased shall apply solely.

Service information

If you require technical service or need replacement parts, please contact your Leica sales representative or dealer who sold this product.

Please provide the following information:

- Model name and serial number of the instrument.
- Location of the instrument and name of the person to contact.
- Reason for the service call.
- Delivery date of the instrument.

Shutdown and disposal of the instrument

The instrument or parts of the instrument must be disposed of in compliance with the local laws.

