Manual Liquid Station
PS-C280 / PS-C560

1 Specifications

Article: **810923**

Scope of delivery: Liquid Station Windows control software for easy conection to a Microlab 500/600 (USB stick)
Data cable Sampler USB to RS232 (P/N 810923-002)
Data cable Dilutor USB to RS232 (P/N 810923-001)

Requirements Windows 7 and higher, 2GB RAM, dotNet 4.5

Article: **810924**

Scope of delivery: Sample station PSC-280 with 2 rack positions
Rinse station
Sample needle Carbon/ PTFE ID 0,8mm (P/N 810923-004)
Sample loop FEP ca. 7,5ml (P/N 810923-007)
Adapter RS232 to Microlab 500 (optional) (P/N 810923-003)
Adapter ¼-28 UNF to M6 (optional) (P/N P-694)

Dimensions : H 620mm / W 355mm / D 550mm
Weight: 8.1 kg
Rack positions: 2
Power requirement: 100-240 VAC, 37-63 Hz, 1.
Control: RS232, USB

Article: **810925**

Scope of delivery: Sample station PSC-560 with 4 rack positions
Rinse station
Sample needle Carbon/ PTFE ID 0,8mm (P/N 810923-004)
Sample loop FEP ca. 7,5ml (P/N 810923-007)
Adapter RS232 to Microlab 500 (optional) (P/N 810923-003)
Adapter ¼-28 UNF to M6(optional) (P/N P-694)

Dimensions: H 620mm / W 580mm / D 550mm
Weight: 11.7 kg
Rack positions: 4
Power requirement: 100-240 VAC, 37-63 Hz, 1.9
Control: RS232, USB

2 Setup

2.1 Software Setup

With the system, a USB stick is delivered, containing the required setup file.
For installing the software please run the following program:

- Setup.exe
  - installs interface driver for FTDI
  - installs Software Liquid Station

After installation you will find a link 'Liquid Station' on both desktop and start menu.

2.2 Hardware Setup

- Syringe drives / Dilutors
  - Must be connected with your PC by using the supplied cable.
    Use the cable with the label "Dilutor" and connect to an available USB port on your computer with the diluter (RS232-COM).

- Sample Station (PS-C280 / PS-C560)
  - The Sample Station is connected to the PC with the supplied cable. Use the cable with the label "Sampler" and connect to an available USB port on your computer with the sampler (COM1).

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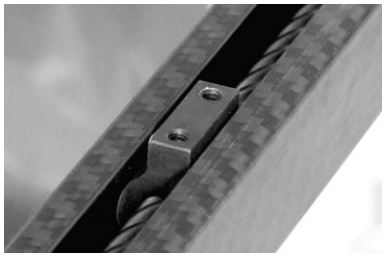
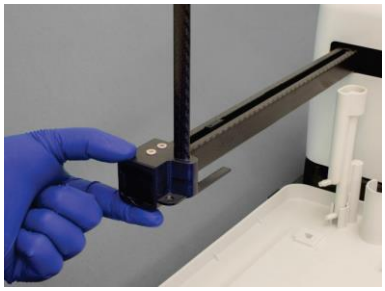
Attention!!! The USB-RS232 adapter cables are not ordinary USB-RS232 adapters. The software works exclusively with these cables. The cables are assigned to the devices and must not be interchanged.

2.2.1 Installation Z Drive Assembly (Sample Needle Unit)



Find the Y-axis carriage on the arm of the autosampler. The Z-drive will be attached to this carriage.



Slide the Z-drive onto the y-arm until the two holes in the Y-axis slider block align with the matching holes in the Y-axis carriage.

Secure the Z-drive to the carriage using the two thumbscrews.

2.2.2 Installation Rinsing Station

Connect waste tubing to the rinsing station. Engage the rinsing station into the holder. Connect the waste tubing with a waste container. The waste container must be lower than the sampler.

2.2.3 Installation Racks & Standards

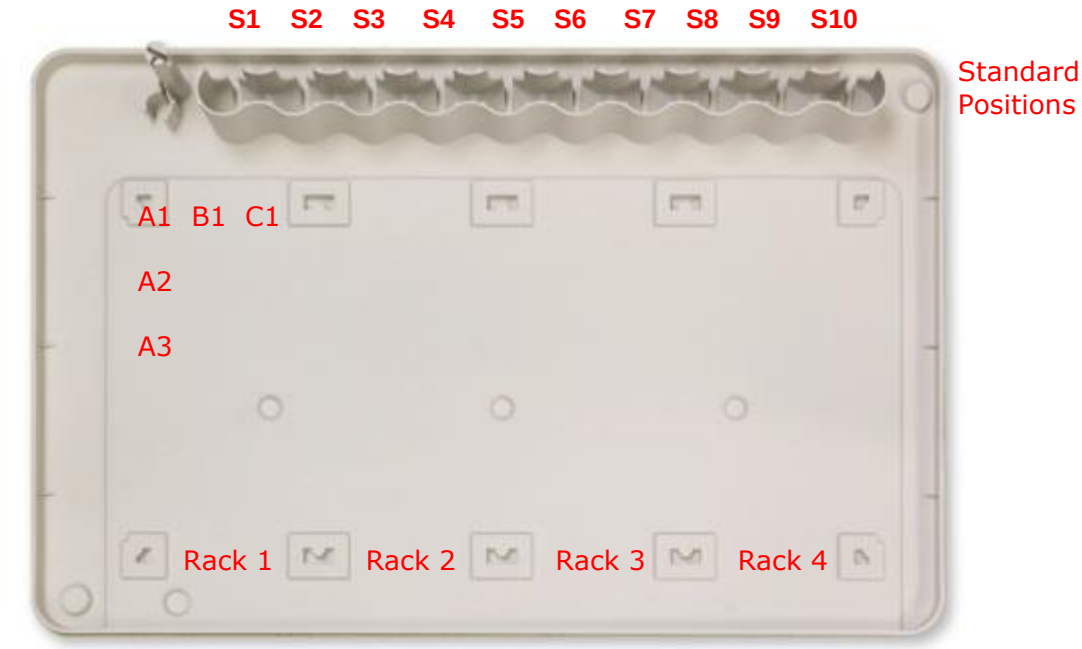
Place vial racks at the sample tray so that the feet on the rack's underside engage the locating slots on the sample tray's surface. Correctly placed sample vial racks will not move more than ±2millimeters in each direction.

The name of the racks is from left to right R1, R2, R3, R4.
The designations of the vials on the racks is as follows: (A1 rear left)

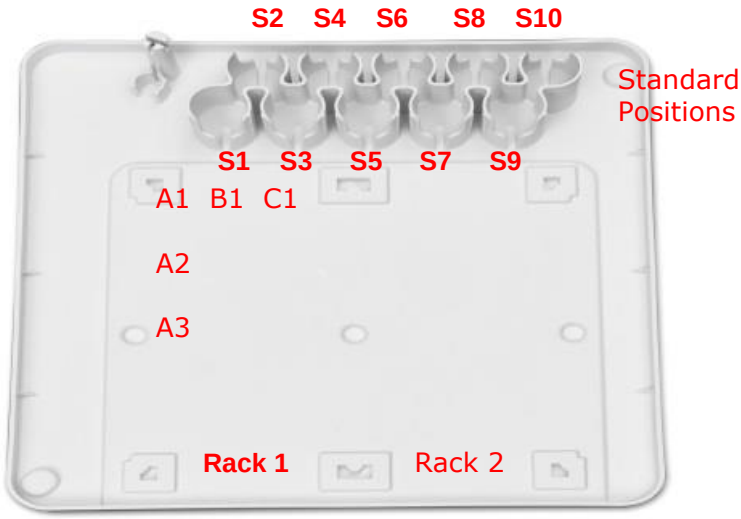
A1	B1	...
A2	B2	...
...	...	...

The complete name of each vial results from rack name, hyphen and vial position, for example: R1-A1, R2-B3
Other spellings are not allowed.

PS-C560



PS-C280



Rack types

3x7	50ml Vials	A1-A7/B1-B7/C1-C7
3x8	30ml Vials	A1-A8/B1-B8/C1-C8
4x10	20ml Vials	A1-A10/B1-B10/C1-C10/D1-D10
5x12	14ml Vials	A1-A12/B1-B12/C1-C12/D1-D12/E1-E12
6x15	7ml Vials	A1-A15/B1-B15/C1-C15/D1-D15/E1-E15/F1-F15

2.2.4 Connecting Microlab with Sample Station

Microlab 600

Microlab 500

Connect the tubing of the sample needle of the sampler with the right valve of the ML600 respectively the right side of the ML500 Valve. (Pictures of tube connectors are similar and may vary depending on the system) Please note that the tube fittings have ¼-28 threads. In case of a ML500 an adapter (P/N P-694) must be used to convert from M6 thread to ¼-28.

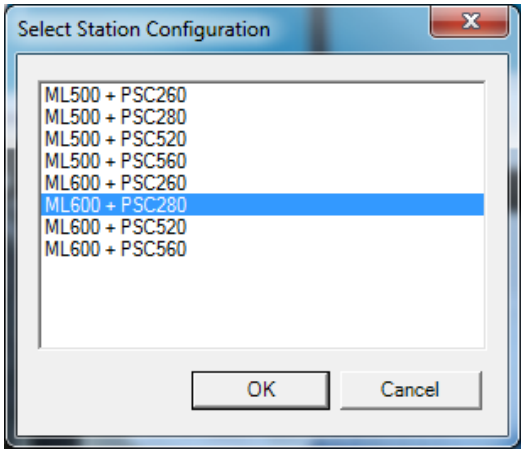
3 Software

After starting the program by clicking the desktop link the following window appears:

3.1 Station Configuration

Before the first log in select your system configuration (combination dilutor & sampler).
The following Hamilton Microlabs are implemented:

Microlab 500: Models 530/531
Microlab 600: Models 615/625/635 (Fluidic tubing according to ML625-DIL required)

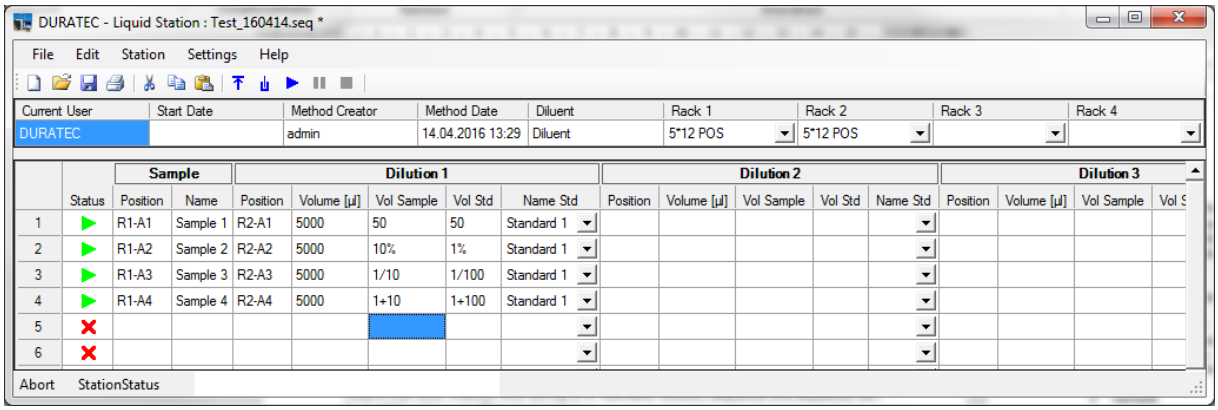


3.2 Log in

At the first log in only one user "admin" is created, which does not require any password.
So you can start the actual program directly by clicking on "OK".
At the right corner you can choose the language.
Before creating a new sequence please make all important settings (see section 3.4.3).

3.3 Sequence Table

After log in the following window appears:



In the sequence table you can create, start, save and load dilution sequences. This means that after creation and saving of a 'standard' dilution sequence this sequence can be loaded and run as often as necessary.

Current User: The system fills in the user name as selected during log-in

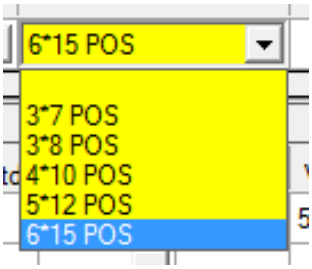
Start Date: The system fills in the start time of the sequence

Method creator: the user who created the sequence

Method Date: Methods last save date

Diluent: field you have to enter the current diluent. The connected diluent has to be entered before in "Settings-Station-Diluent". Refer to Section 3.4.2. Please note the correct spelling.

Rack 1-4: The selection fields "Rack 1" to "Rack 4" have to be set to the racks currently in use. When PS-C280 only two racks are available, so the fields "rack 3" and "rack 4" have to remain empty. For a PS-C560 four rack positions are available. The collection contains the standard racks from Bel-Art Products 'Scienceware'



Additional rack types can be implemented upon request

The icons mean:

- Skip: line will not be processed (user)
- Go: line will be processed (user)
- Express: line will be processed preferentially (user)
- Error: Line has an error (system)
- Running: Line is in process (system)
- Done: Line is finished (system)

- Sample
  - *Position*: rack position of the sample (e.g. R1-A1)
  - *Name*: name of the sample (only information)

Status

By clicking the symbol users can change the line status to „Skip", „Go" or „Express". The symbols 'Error', 'Running' and 'Done' are set by the software. By clicking the column header you can change the states of all lines.

The line will not be processed (user)

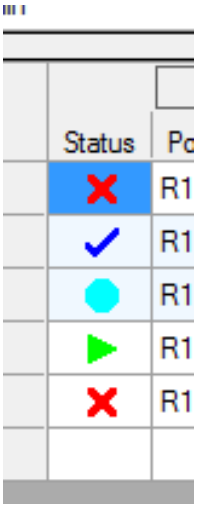
The line will be processed (user)

The line will be processed preferentially (user)

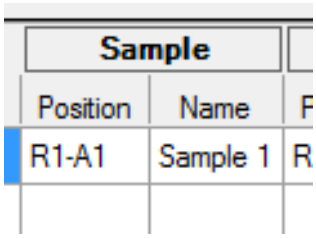
The line has an error (system)

The line is in process (system)

The line is finished (system)



Sample

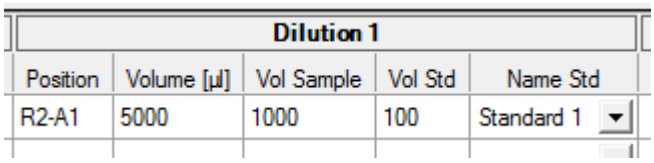


The vial with the undiluted sample.

Position Position of the sample vial on the tray (e.g. R1-A1). Please note the correct spelling.

Name Name of the sample (optional – informative only)

Dilution (1-3)



The destination vial and dilution parameters.

Position : Position of the destination vial on the tray (e.g. R2-A1). Please note the correct spelling

Volume [µl]: The total volume of the dilution in µl

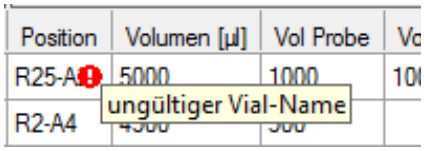
Vol Sample: The part volume of sample. The following notations are allowed:

- 100 absolute Volume in µl
- 10% percentage
- 1:10 relative volume based on the total volume
- 1+9 relative volume based on the total volume
- 1/10 same as 1:10

Vol Std: The part volume [µl] of standard. Notation see above

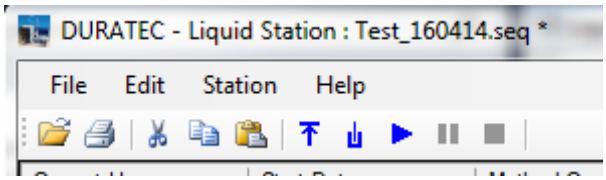
Name Std The standard name (see section 0 **Standards**)

The red dots indicate that the according field contains a wrong value. To display an error notification you have to drag the mouse over the red dot.

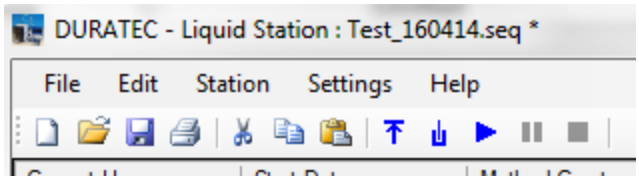


3.4 Menu Bar

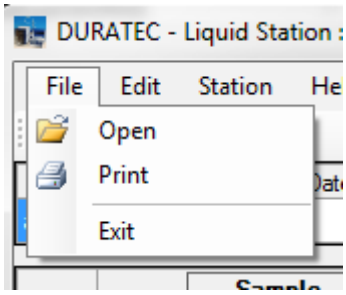
Users without admin rights (see section 0):

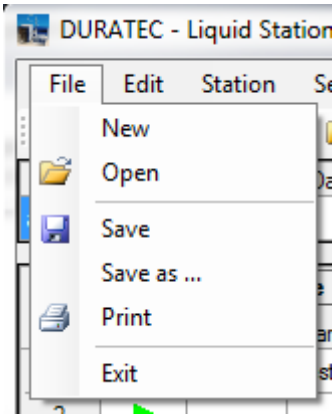


Users with admin rights (see section 0):



3.4.1 Menu File





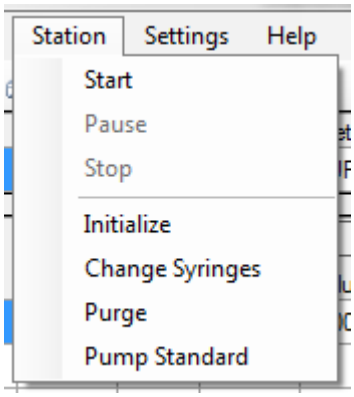
Users without admin rights

Users with admin rights

New	Only for user with admin rights. Creating a new and empty sequence table
Open	Open an already existing sequence
Save	Only for user with admin rights. Saving a sequence table
Save as	Only for user with admin rights. Saving a sequence table with a new name or path
Print	Open a print preview, on which the term of the sequence is enabled. The print settings are identical to those of Internet Explorer.

The commands are also accessible via the usual icons.

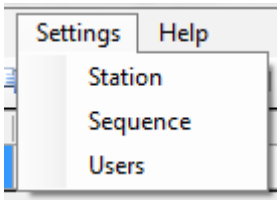
3.4.2 Menu Station



	Start	Starts dilutions according to the values given in the table
	Pause	Pauses dilutions. Continue with start
	Stop	Stops sequence
	Initialize	Initializes diluter and sampler
	Change Syringes	Moves the syringe drive down to allow a syringe exchange. After changing press "Initialize".
	Purge	Purging the system with the defined „Initial Wash Volume" (2.5.1)
	Pump Standard	Pumps standard into waste. This function is only useful if standards are accessed via a MVP motor valve instead of vials.

3.4.3 Menu Settings

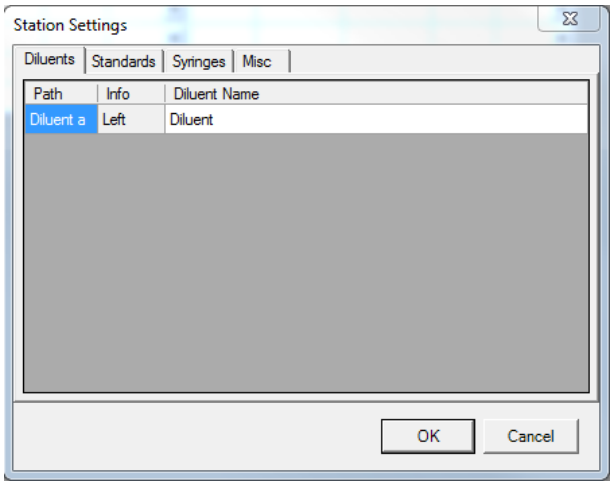
This menu is available only for users with admin rights



Station Settings

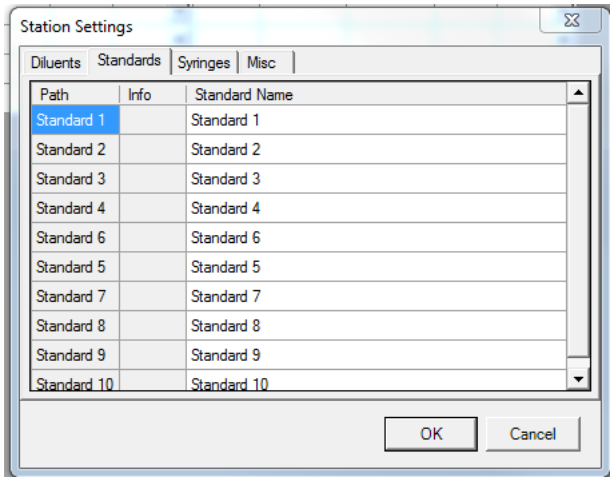
This dialog is available only for users with admin rights

Diluents



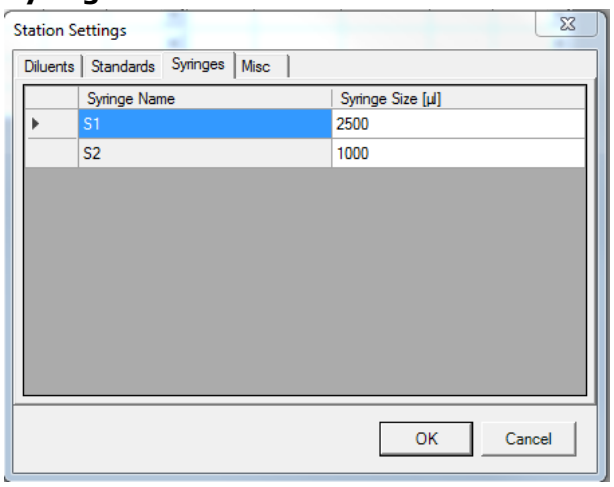
Please enter the diluent names. The diluent in the sequence table must then be entered in the same spelling as in this table entered. In some cases (e.g. when using a motor valve MVP) it is possible to use different diluents.

Standards



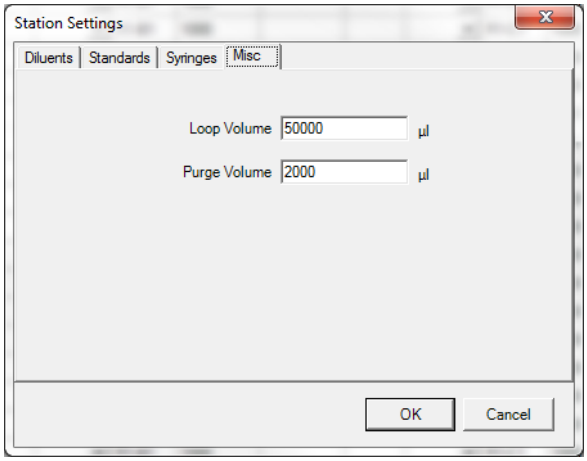
Please enter the standard names. The positions on the sampler are shown at the picture in section 2.2.3 (e.g. Standard 1 – S1). In some cases (e.g. when using a motor valve MVP) it is possible to use standards not located in these vials.

Syringes



Please enter the nominal volumes of the syringes mounted.

Misc



Loop Volume: The volume of the tubing between needle and valve. This volume is used to block dilutions where sample or standard could reach the syringe.

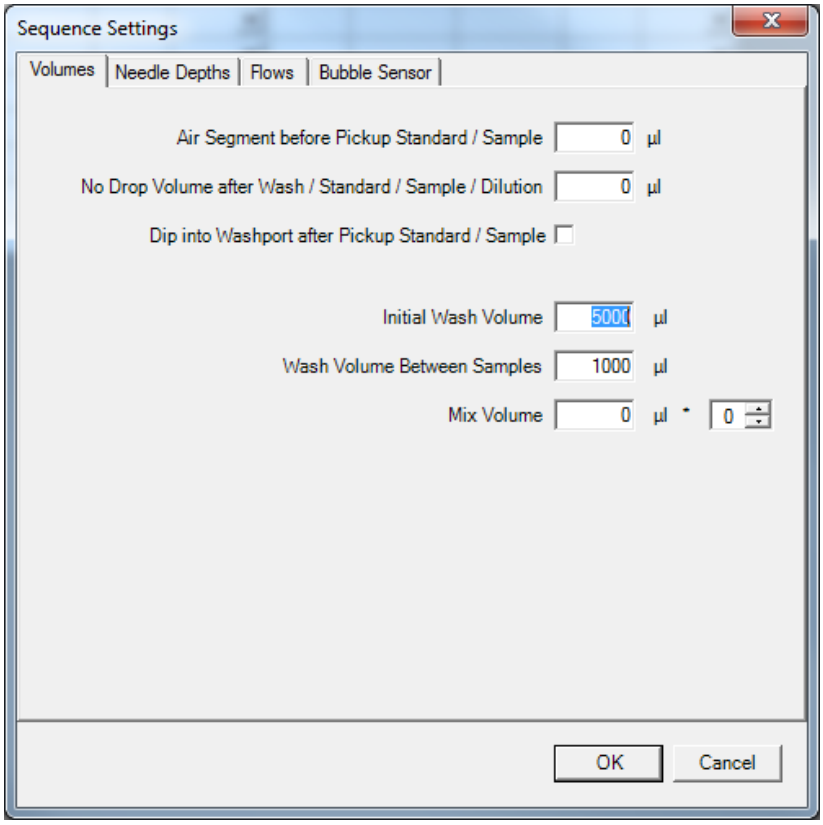
Purge Volume: This volume will be purged to waste when clicking purge (see section 3.4.2)

Sequence Settings

This dialog is available only for users with admin rights

The settings in this dialog are stored together with the sequence, so they can be different for each individual sequence.

Volumes



Air Segment: The volume of the air gap, which is picked up before the sample or standard is picked up into the sample loop, in order to avoid dispersion.

No Drop Air Volume The volume which is retracted after dispense or pickup in order to avoid drops

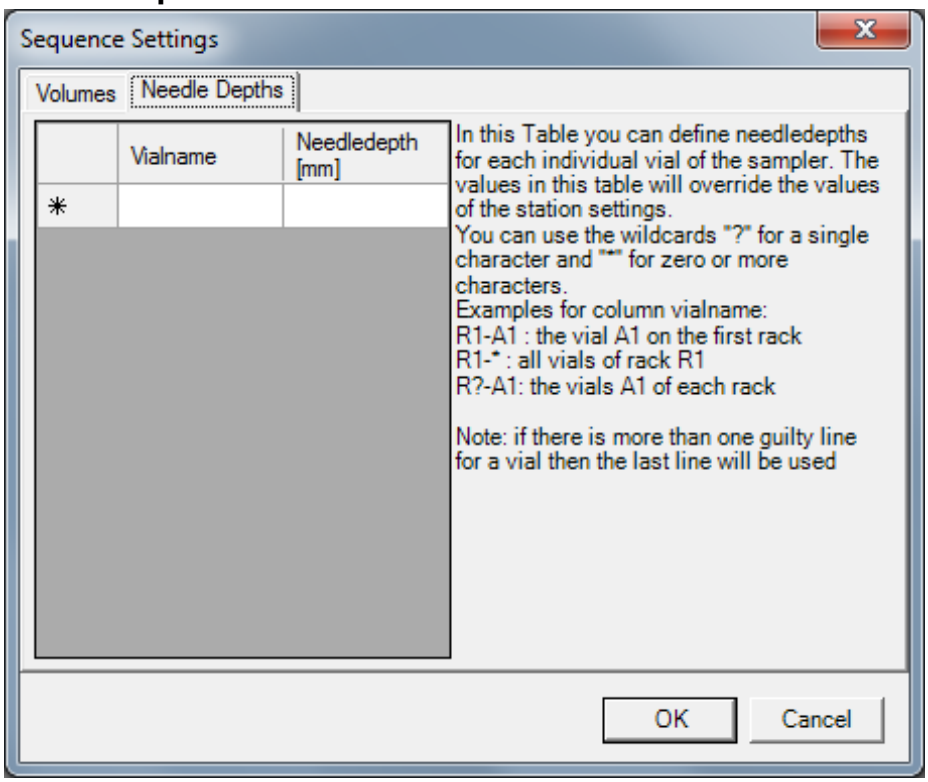
Dip into Washport: Cleaning needle from outside by dipping into the washport

Initial Wash Volume Flushing volume at the beginning of a sequence.

Wash Volume between samples Flushing volume between two samples

Mix Volume Mixing is done by repeated aspiration and dispense. The first parameter is the volume which is used during mixing. The second parameter is the number of repetitions.
Pay attention to the needle depth (see section 0). The needle must dip into the liquid in the vial.

Needle Depths

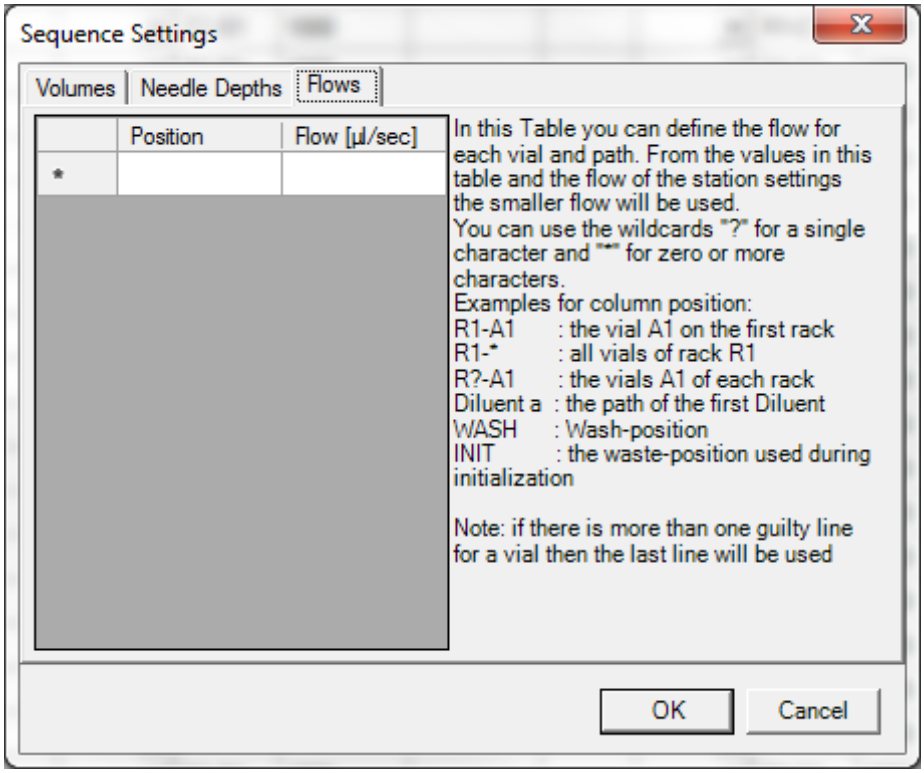


Needle depths can be adjusted individually for each sequence and each vial. The depth is measured from the upper, fully retracted needle position. Needle depth can be adjusted between 0mm (fully up) and 150mm (fully down)
Pay attention that the needle does not crash the bottom of the vial. If there might be a sediment in the vial take care that the needle does not reach this sediment.

By default needle depths are defined as follows:

Sample positions:	130mm
Dilution positions:	80mm

Flows



Flows can be adjusted individually for each sequence and each vial. If the table does not contain a flow value for a given position a standard flow which is suitable for most cases. Therefore flows should only be changed in case of problems like

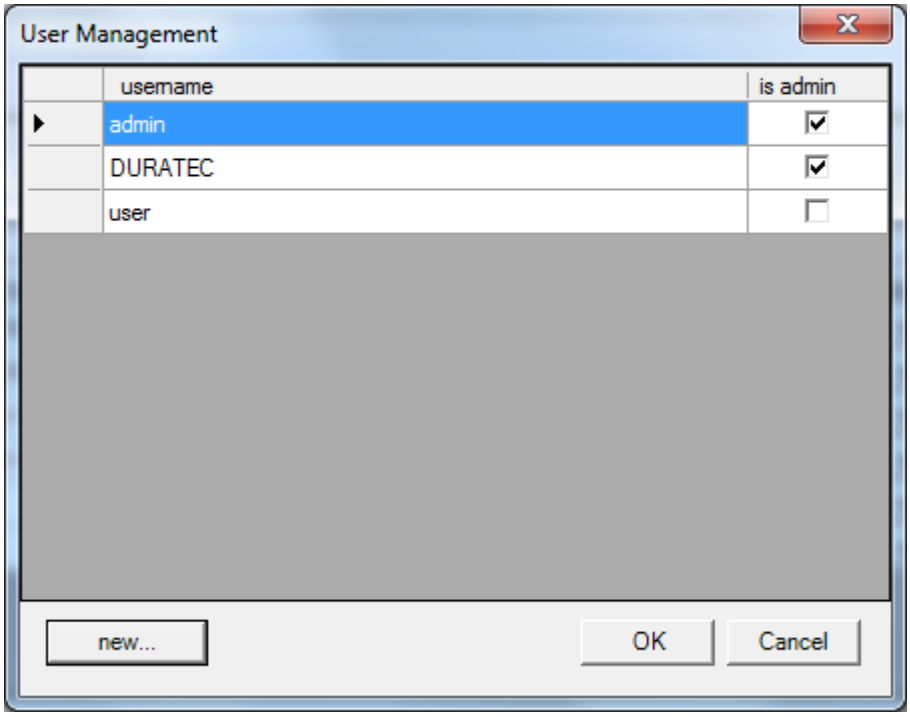
- Outgassing air during aspiration (slow flow)
- High viscous samples or diluents (slow flow)
- Too much sprinkling during dispense (slow flow)

Due to hardware restrictions not every flowrate is possible. If the desired flowrate is not possible the system chooses the next lower possible flowrate. Beside this there are minimum and maximum flowrates for the different syringe sizes:

	Flow [µl/sec]			
	Microlab 600		Microlab 500	
Syringe size	min	max	min	max
10µl	0,003	6,5	#	#
25µl	0,007	16,5	0,1	12,5
50µl	0,014	33	0,2	25
100µl	0,03	66,5	0,4	50
250µl	0,07	166,5	1	125
500µl	0,14	333	2	250
1000µl	0,3	665	4	500
2500µl	0,7	1250	10	1250
5000µl	1,4	2500	20	2500
10000µl	3	5000	40	5000
25000µl	7	5000	100	12500
50000µl	14	5000	#	#

Users

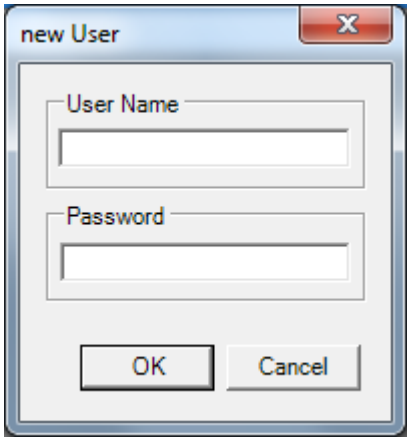
This dialog is available only for users with admin rights



Allows you to create new users and the setting of rights.

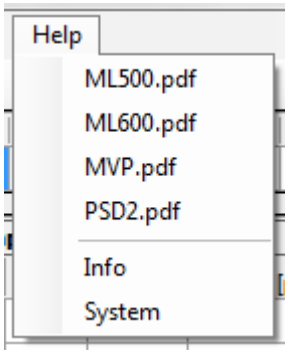
If a user is marked as ‘is admin’ he will be shown the menus ‘Settings’ and the commands ‘New’, ‘Save’ and ‘Save as’ which are hided for a normal user.

When delivered, there is only the user "admin" with no password.
By clicking the button ‘new...’ the following dialog is opened:



Enter a user name and an associated password (can be empty). If the user name you entered already exists, it is asked whether the user should be overwritten. This is useful if you want to change a user's password

3.4.4 Menu Help



Shows available manuals.

Info
A dialog box is shown with some information about the the ‚Liquid Station' software.

System
A window is opened with several information about your computer.

4 Service & Safety Instructions

4.1 Diluter Microlab 500/600

Refer to the corresponding device manuals.
This can be found at [Help / Manuals Hamilton]

4.2 Sample Station PS-C280/560

No special service / maintenance is required on this unit.
For more information, refer to the device manuals.

4.3 Change Syringes

To remove the syringes, go to [Station / Change Syringes].

Install the new syringes and confirm with [OK]

4.4 Cleaning

At regular intervals, the entire system should be rinsed with a pure medium. Use the purge function [Station / Purge]

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