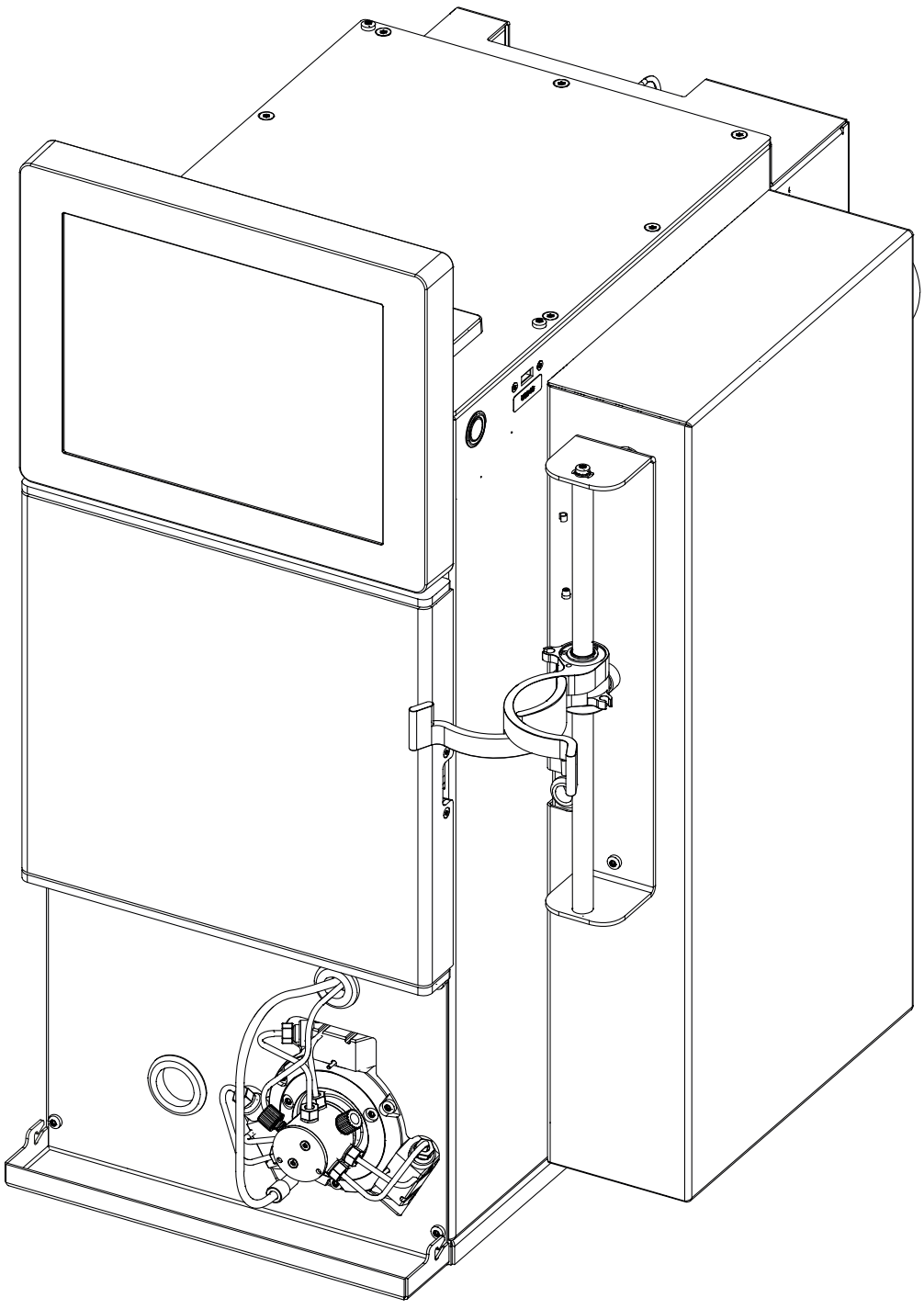
Pure Chromatography Instrument C–805

Operation Manual



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1 About this document

This operation manual is applicable for all variants of the instrument.
Read this operation manual before operating the instrument and follow the instructions to ensure safe and trouble-free operation.
Keep this operation manual for later use and pass it on to any subsequent user or owner.
BÜCHI Labortechnik AG accepts no liability for damage, faults and malfunctions resulting from not following this operation manual.
If you have any questions after reading this operation manual:

▶ Contact BÜCHI Labortechnik AG Customer Service.

https://www.buchi.com/contact

1.1 Warning notices in this document

Warning notices warn you of dangers that can occur when handling the device. There are four danger levels, each identifiable by the signal word used.

Signal word	Meaning
DANGER	Indicates a danger with a high level of risk which could result in death or serious injury if not prevented.
WARNING	Indicates a danger with a medium level of risk which could result in death or serious injury if not prevented.
CAUTION	Indicates a danger with a low level of risk which could result in minor or medium-severity injury if not prevented.
NOTICE	Indicates a danger that could result in damage to property.

1.2 Symbols

The following symbols are displayed in this operation manual or on the device:

1.2.1 Warning symbols

Symbol	Meaning
	General warning
	Dangerous electrical voltage
	Flammable substances
	Laser class 1

1.2.2 Mark-ups and symbols

NOTE

This symbol draws attention to useful and important information.

☑ This character draws attention to a requirement that must be met before the instructions below are carried out.

▶ This character indicates an instruction that must be carried out by the user.

⇨ This character indicates the result of a correctly carried out instruction.

Mark-up	Explanation
Window	Software Windows are marked-up like this.
Tab	Tabs are marked-up like this.
Dialog	Dialogs are marked-up like this.
[Button]	Buttons are marked-up like this.
[Field names]	Field names are marked-up like this.
[Menu / Menu item]	Menus or menu items are marked-up like this.
Status	Status is marked-up like this.
Signal	Signals are marked-up like this.

1.3 Trademarks

Product names and registered or unregistered trademarks that are used in this document are used only for identification and remain the property of the owner in each case.

1.4 Connected devices

In addition to these operating instructions, follow the instructions and specifications in the documentation for the connected devices.

2 Safety

2.1 Proper use

The instrument is designed and built for laboratories.
The instrument can be used for the following tasks:

- Purification
- Separation of one or more compounds from a mixture

2.2 Use other than intended

Use of any kind other than that described in Chapter 2.1 "Proper use", page 8 and any application that does not comply with the technical specifications (See Chapter 3.5 "Technical data", page 14) constitutes use other than intended.
In particular, the following applications are not permissible:

- Use of the instrument in areas which require explosion-safe instruments.
- Use of the instrument with solvents containing peroxides.
- Use the instrument for production purposes.

2.3 Staff qualification

Unqualified persons are unable to identify risks and are therefore exposed to greater dangers.
The device may only be operated by suitably qualified laboratory staff.
These operating instructions are aimed at the following target groups:

Users

Users are persons that meet the following criteria:

- They have been instructed in the use of the device.
- They are familiar with the contents of these operating instructions and the applicable safety regulations and apply them.
- They are able on the basis of their training or professional experience to assess the risks associated with the use of the device.

Operator

The operator (generally the laboratory manager) is responsible for the following aspects:

- The device must be correctly installed, commissioned, operated and serviced.
- Only suitably qualified staff may be assigned the task of performing the operations described in these operating instructions.
- The staff must comply with the local applicable requirements and regulations for safe and hazard-conscious working practices.
- Safety-related incidents that occur while using the device should be reported to the manufacturer (quality@buchi.com).

BUCHI service technicians

Service technicians authorized by BUCHI have attended special training courses and are authorized by BÜCHI Labortechnik AG to carry out special servicing and repair measures.

2.4 Residual risks

The device has been developed and manufactured using the latest technological advances. Nevertheless, risks to persons, property or the environment can arise if the device is used incorrectly.

Appropriate warnings in this manual serve to alert the user to these residual dangers.

2.4.1 Faults during operation

If a device is damaged, sharp edges, moving parts or exposed electrical wires can cause injuries.

- ▶ Regularly check device for visible damage.
- ▶ If faults occur, switch off the device immediately, unplug the power cord and inform the operator.
- ▶ Do not continue to use devices that are damaged.

2.4.2 Malware infection due to connections with other devices or network

Connections with other devices or a network can cause a malware infection to the instrument.

- ▶ Install antivirus software and firewall on the instrument before connecting it to other devices or network.

2.4.3 Damage to the internal memory due to incorrect shutting down of the instrument

Incorrect shutting down of the instrument can cause damage to the internal memory.

- ▶ Shut down the instrument as described. See Chapter 6 "Operation", page 24

2.5 Personal protective equipment

Depending on the application, hazards due to heat and/or corrosive chemicals may arise.

- ▶ Always wear appropriate personal protective equipment such as safety goggles, protective clothing and gloves.
- ▶ Make sure that the personal protective equipment meets the requirements of the safety data sheets for all chemicals used.

2.6 Modifications

Unauthorized modifications can effect safety and lead to accidents.

- ▶ Use only genuine BUCHI accessories, spare parts and consumables.
- ▶ Carry out technical changes only with prior written approval from BUCHI.
- ▶ Only allow changes to be made by BUCHI service technicians.

BUCHI accepts no liability for damage, faults and malfunctions resulting from unauthorized modifications.

3 Product description

3.1 Description of function

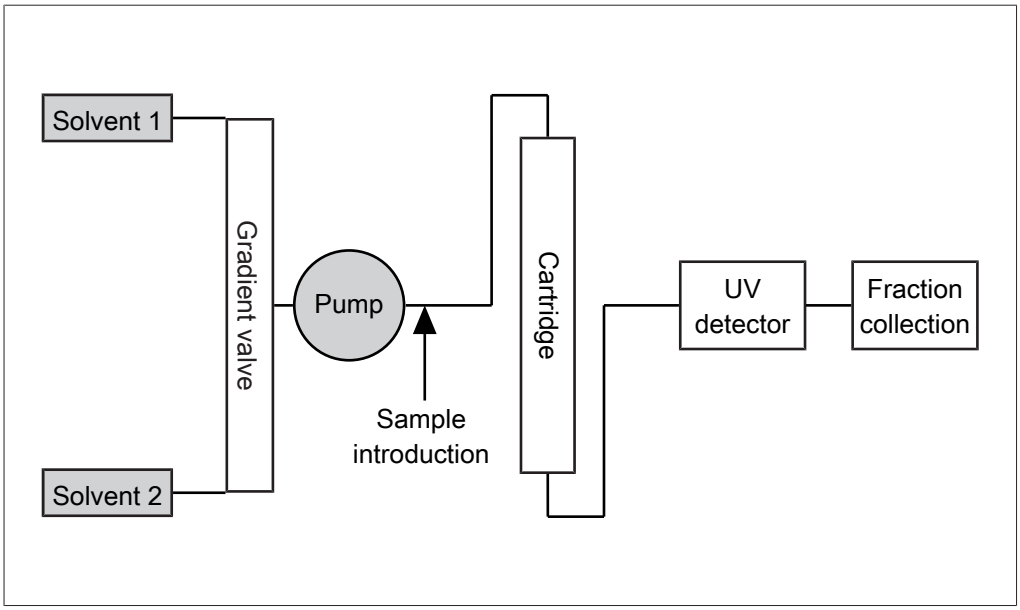
The instrument is a purification device designed to purify complex samples by flash chromatography.

- Flash chromatography has the ability to separate gram size samples in short period.

The instrument allows:

- 2 different solvents
- Injection of liquid or solid sample
- Separation on a cartridge
- Identifying the compounds by UV
- Collecting the desired fractions

Instrument schematic:



3.2 Configuration

3.2.1 Front view

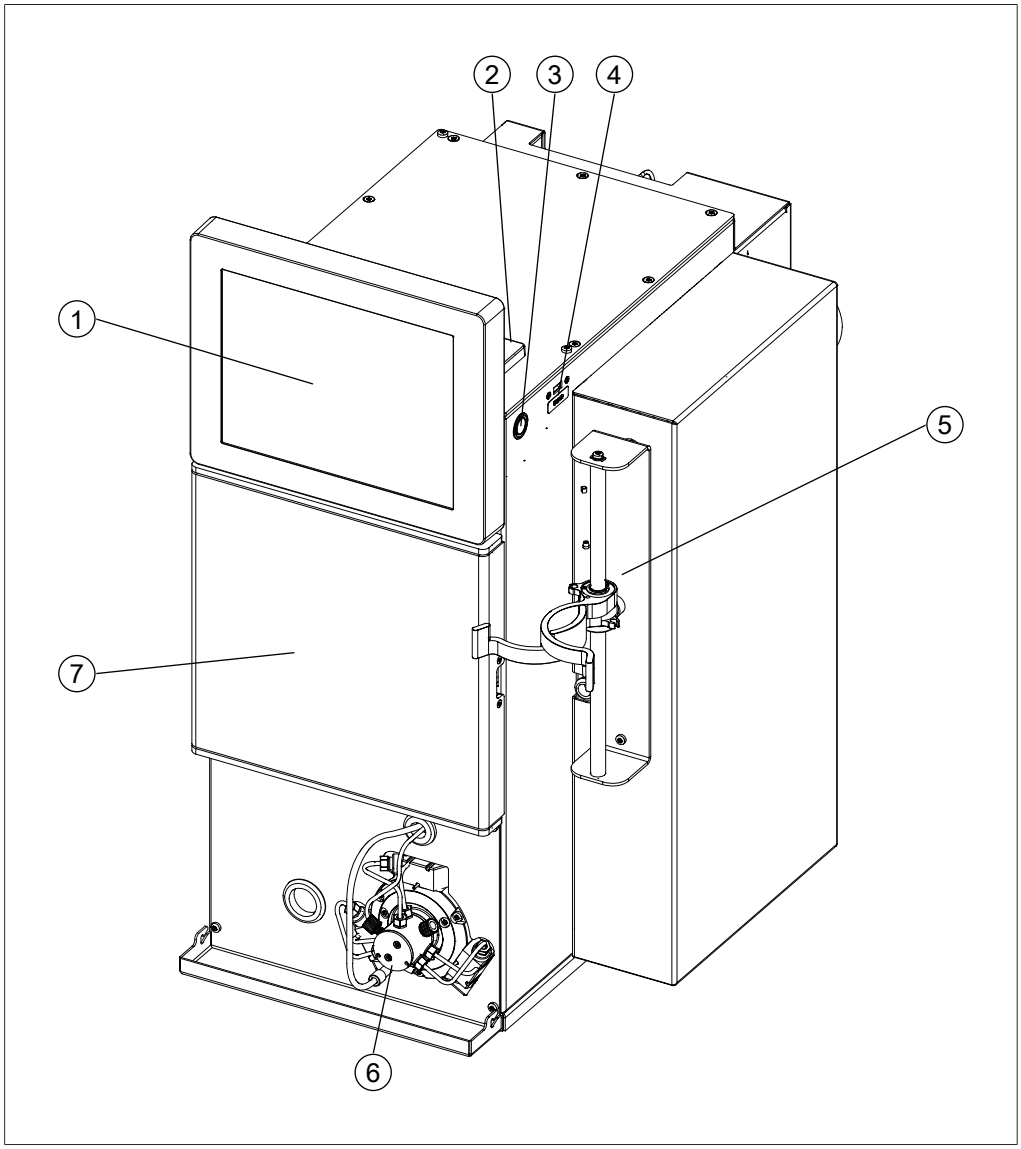


Fig. 1: Front view

1	Control panel	2	RFID reader
3	On/Off switch	4	USB Port
5	Cartridge holder	6	Flash pump
7	Fraction collection bay		

3.2.2 Rear view

NOTE

All electrical connections are not limited energy.

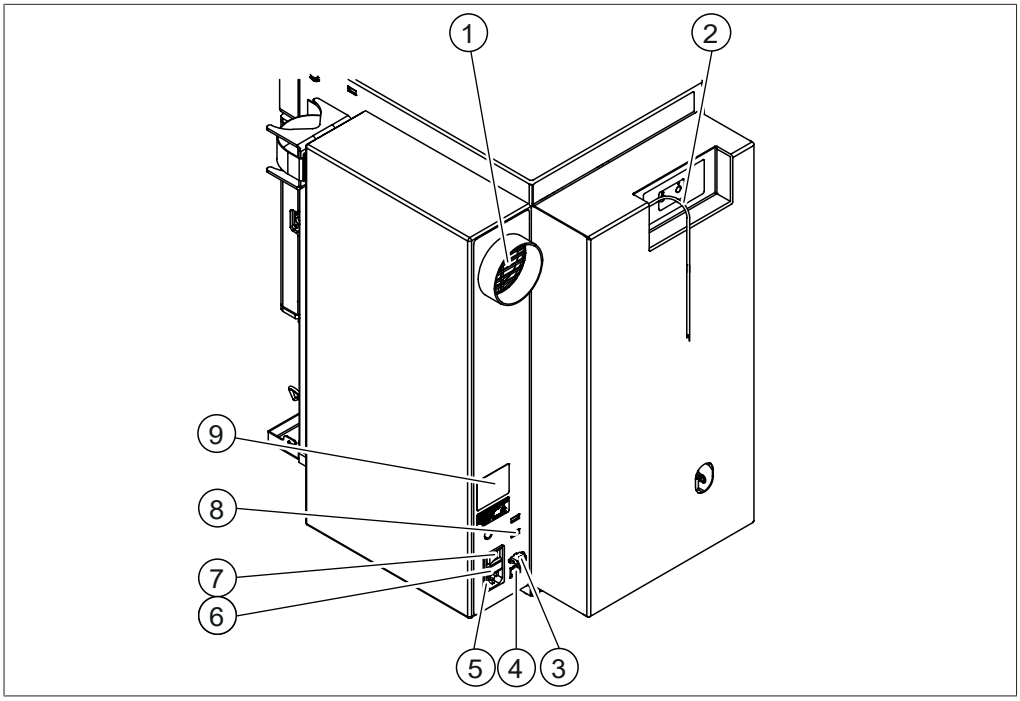


Fig. 2: Rear view

1	Ventilation slot	2	Gradient valve (See Chapter 3.2.3 "Connections on gradient valve", page 13)
3	Signal connection (for external air supply)	4	LAN port
5	Power supply connection	6	Fuse
7	On/Off master switch	8	USB ports
9	Type plate (See Chapter 3.3 "Type plate", page 13		

3.2.3 Connections on gradient valve

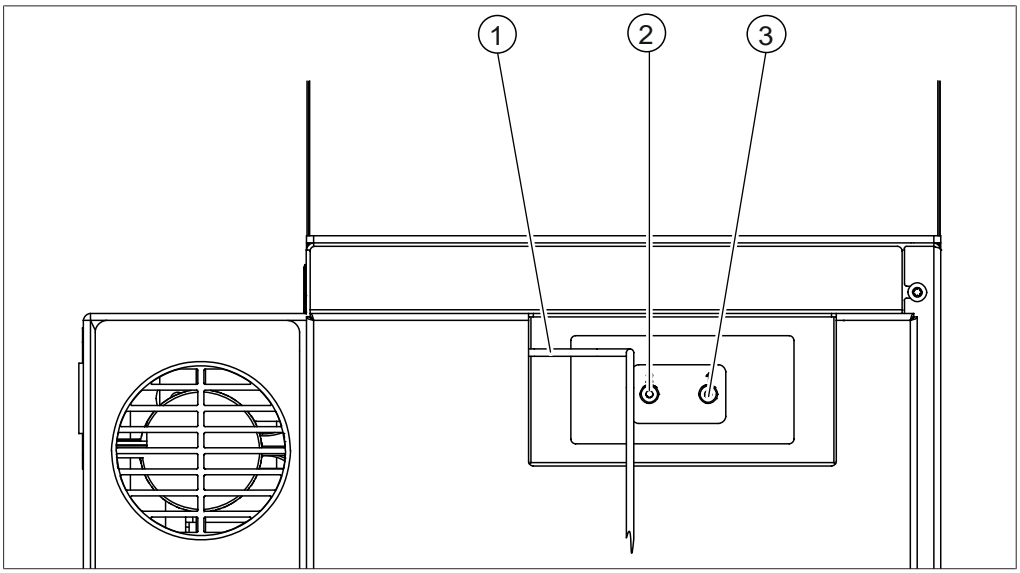


Fig. 3: Connections on the gradient valve

1 Waste line
2 Solvent line 2
3 Solvent line 1

3.3 Type plate

The type plate identifies the instrument. The type plate is located at the rear of the instrument.

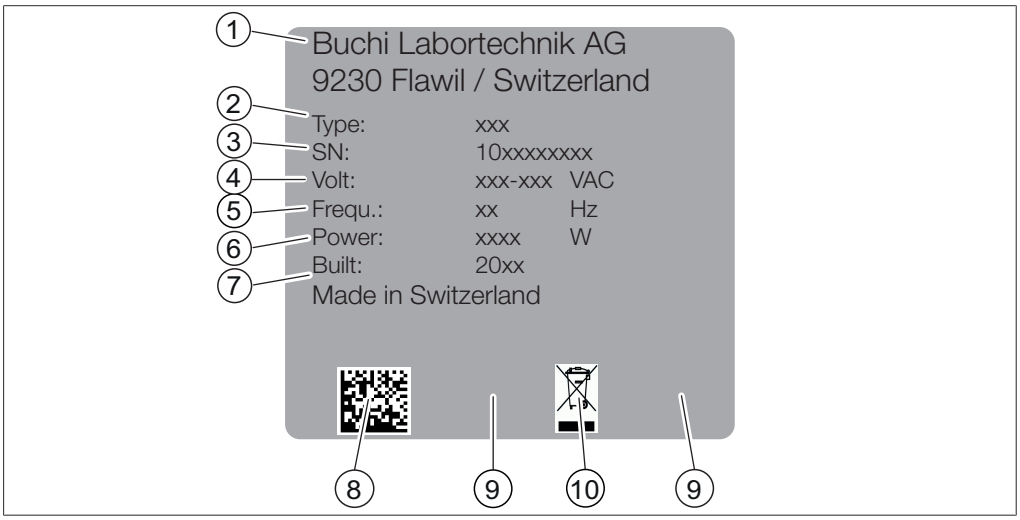


Fig. 4: Type Plate

1 Company name and address
2 Instrument name
3 Serial number
4 Input voltage range
5 Frequency
6 Power consumption maximum
7 Year of manufacture
8 Product code
9 Approvals
10 Symbol for "Do not dispose of as household waste"

3.4 Scope of delivery

NOTE

The scope of delivery depends of the configuration of the purchase order.

Accessories are delivered as per the purchase order, order confirmation, and delivery note.

3.5 Technical data

3.5.1 Pure Chromatography Instrument C-805

	Pure C-805
Dimension (W x D x H)	365 x 570 x 680 mm
Weight	24 kg
Clearance on each side of the instrument	200 mm
Power consumption	350 W
Connection voltage	100 - 240 V ± 10 %
Frequency	50 - 60 Hz
Fuse	4 A
Overvoltage category	II
Pollution degree	2
IP Code	IP 20
Solvents	2
USB port	3
LAN port (RJ45)	1
RFID reader (racks)	Yes
RFID reader (cartridges)	Yes
Fraction collector bay	closed
Lighted fraction collector bay	Yes
Vapor sensor	Yes

Pump Flash Mode

	Pure C-805
Gradient	binary
Pressure range	0 - 50 bar
Flow rate	0 - 250 mL/min
Flow rate accuracy	< 2 %
Functional principle	self-priming
Specification	3 pistons radial arranged

UV Detector

	Pure C-805
UV wavelength range	200 - 400 nm

	Pure C-805
Light sources	Deuterium
Lifetime lamp	2000 hours
Detector	DAD

3.5.2 Ambient conditions

For indoor use only.

Max. altitude above sea level	2000 m
Ambient temperature	5–40°C (25°C) No maximum performance above 25°C
Maximum relative humidity	80% non-condensing, for temperatures up to 31°C
Storage temperature	max. 45 °C

3.5.3 Material

Component	Materials of construction
Housing	Powder coated steel 1.4301
Fraction collection bay	PMMA / PET
Pump head	PEEK
Pump cover	PP
Pump excenter housing	Aluminum
Tubings	FEP
Fitting	POM
Valve screw fitting	POM
Ferrule	ETFE
Cone ring	POM
Radial seal	PTFE
Pistons	Ceramic

4 Transport and storage

4.1 Transport

NOTICE

Risk of breakage due to incorrect transportation

- ▶ Make sure that all parts of the device are safely packed in such a way as to prevent breakage, ideally in the original box.
- ▶ Avoid sharp movements during transit.

- ▶ After transportation, check the device for damage.
- ▶ Damage that has occurred in transit should be reported to the carrier.
- ▶ Keep packing for future transportation.

4.2 Storage

- ▶ Make sure that the ambient conditions are complied with (see Chapter 3.5 "Technical data", page 14).
- ▶ Make sure a clean solvent like ethanol or isopropanol is in the pump.
- ▶ Wherever possible, store the device in its original packaging.
- ▶ After storage, check the device, all seals and tubing for damage and replace if necessary.

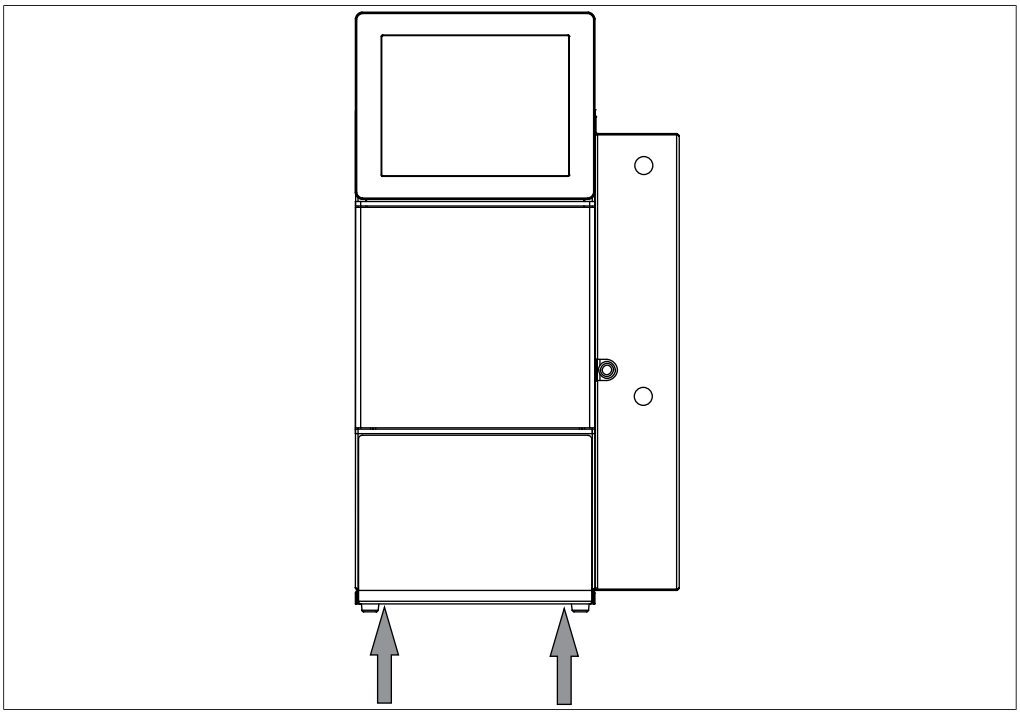
4.3 Lifting the instrument

⚠ WARNING

Danger due to incorrect transportation

The possible consequences are crushing injuries, cuts and breakages.

- ▶ The instrument should be transported by two persons at the same time.
- ▶ Lift the instrument at the points indicated.



- ▶ Lift the instrument – this requires two persons each lifting at one of the points indicated on the bottom of the instrument.

5 Installation

5.1 Installation site

The installation site must meet the following requirements:

- The installation site has a firm, level surface.
- The installation site meets the specifications according to the technical data (e.g. weight, dimension, etc.). See Chapter 3.5 "Technical data", page 14
- The installation site has no obstacles (e.g. water taps, drains, etc.).
- The installation site is not exposed to external thermal loads, such as direct solar radiation.
- The installation site has a own mains outlet socket for the instrument.
- The installation site has enough space that cables / tubes can be routed safely.
- The installation site allows that the power supply can be disconnected at any time in an emergency.
- The installation site is not exposed to increased electromagnetic emissions. Electromagnetic fields in the frequency range between 200 to 300 MHz can cause the instrument to operate incorrectly.
- The installation site meets the requirements of the safety data sheets for all solvents and samples used.

5.2 Before installation

NOTICE

Instrument damage due to switching it on too early.

Switching on the instrument too early after transportation can cause damage.

▶ Climatize the instrument after transportation.

5.3 Securing against earthquakes

The instrument has an earthquake fixing point to protect the device against falling.

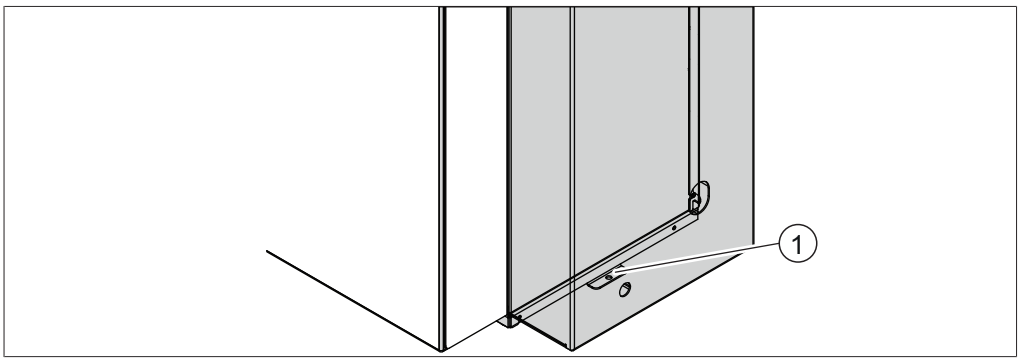


Fig. 5: Securing against earthquakes

1 Fixing point

▶ Tie the lashing mount to a fixed point using strong cord or a wire.

5.4 Establishing electrical connections

NOTICE

Risk of instrument damage because of not suitable power supply cables.

Not suitable power supply cables can cause bad performance or an instrument damage

▶ Use only BUCHI power supply cables.

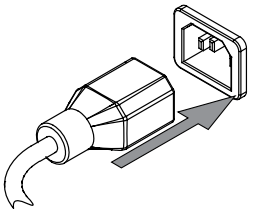
Precondition:

☑ The electrical installation is as specified on the type plate.

☑ The electrical installation is equipped with a proper grounding system.

☑ The electrical installation is equipped with suitable fuses and electrical safety features.

☑ The installation site is as specified in the technical date. See Chapter 3.5 "Technical data", page 14



▶ Connect the power supply cable to the connection on the instrument. See Chapter 3.2 "Configuration", page 11

▶ Connect the mains plug to an own mains outlet socket.

5.5 Establishing solvent connection

NOTICE

Solvent bottles on top of the instrument.

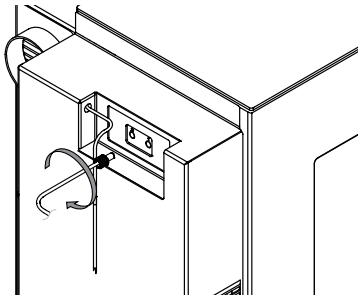
Solvent bottles on top of the instrument can cause property damages.

▶ Locate the solvent bottles next to the instrument.

▶ Use the optional solvent bottle platform.

Precondition:

☑ Make sure that the instrument is not connected to the power supply.

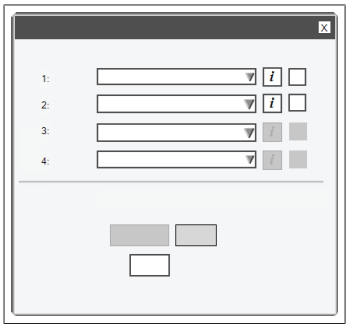


▶ Attach all solvent lines to the instrument. Connections see Chapter 3.2 "Configuration", page 11

▶ Put the other end of the solvent line into the solvent bottle.

▶ Assign the solvent to the solvent lines. See Chapter 5.6 "Assigning solvent to solvent lines", page 20

5.6 Assigning solvent to solvent lines



Navigation path

➔ Tools ➔ Solvent Loading

Precondition:

☑ The solvent bottle is connected to the instrument. See Establishing solvent connection

☑ The solvent you wish to use is part of the solvent library. See Chapter 6.3 "Editing a solvent", page 42

▶ Navigate to the *Solvent Loading* dialog according to the navigation path.

⇨ The display shows the dialog box *Solvent Loading*.

▶ Tap the drop-down list next to **Line 1**.

⇨ The display shows a drop-down list with selectable solvents.

▶ Select the solvent which is connected to solvent line 1.

⇨ The solvent for Line 1 is assigned.

⇨ The drop-down list closes.

▶ Repeat the solvent selection for each line.

▶ Activate the checkbox next to the line you wish to prime.

▶ Tap the button *[Auto Prime]*.

▶ Wait till priming finished.

▶ Tap the button *[Close]*.

⇨ All lines are assigned with solvents.

⇨ The dialog box closes.

5.7 Assembling the waste bottle

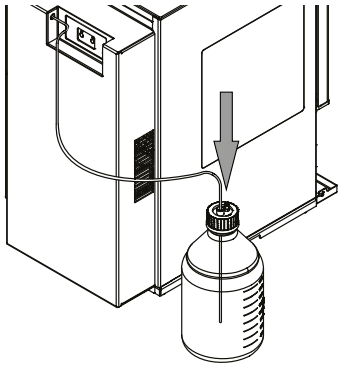
NOTICE

Waste bottle on top of the instrument

Waste bottle on top of the instrument can cause property damages.

▶ Make sure that there is a decline between the connection on the instrument and the waste bottle.

▶ Put the waste line into the waste bottle.



5.8 Assembling the solvent bottle platform (option)

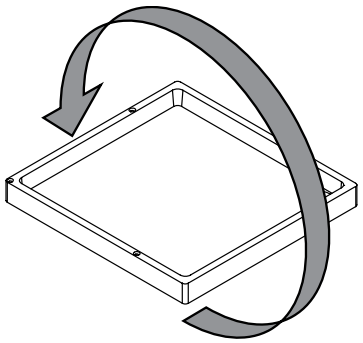
NOTICE

Waste bottle on top of the instrument

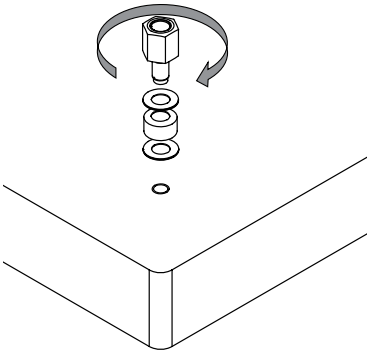
Waste bottle on top of the instrument can cause property damages.

▶ Do not place the waste bottle an the solvent bottle platform.

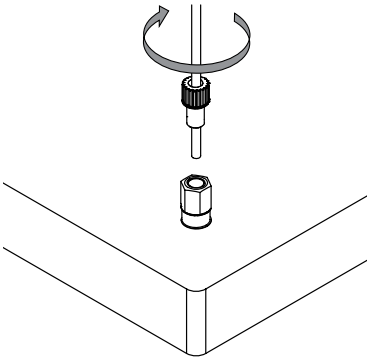
▶ Turn the solvent bottle platform upside down.



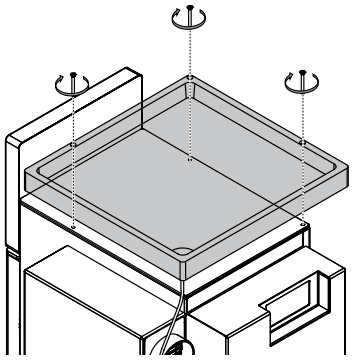
▶ Attach the drain line adapter to the solvent bottle platform



▶ Attach the drain line to the drain line adapter.

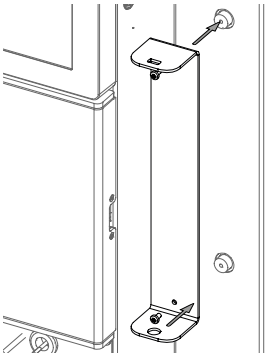


▶ Attach the solvent bottle platform to the instrument with screws.

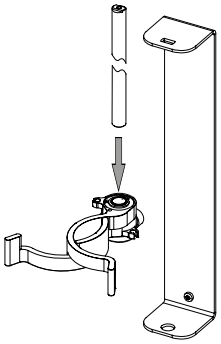


5.9 Assembling the cartridge holder

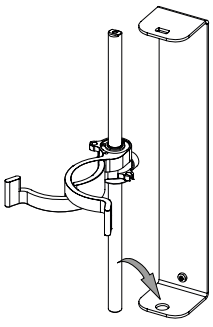
▶ Attach the bracket with screws to the instrument.



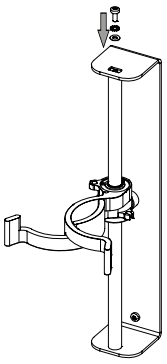
▶ Assemble the cartridge clamp to the rod.
▶ Fix the position of the clamp with the screw.



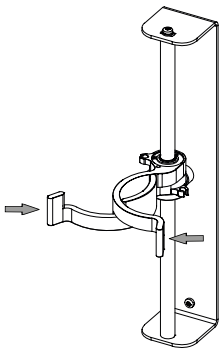
▶ Attach the assembled cartridge clamp to the bracket.



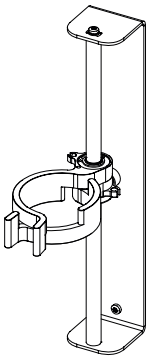
▶ Place a washer and a serrated lock washer on top and attach the cartridge clamp with a screw.
⇨ The cartridge clamp is assembled.



▶ The cartridge clamp can be opened by pressing simultaneously both parts together.



In this position the cartridge can be placed in the clamp.



6 Operation

6.1 Control panel

6.1.1 Layout of control panel

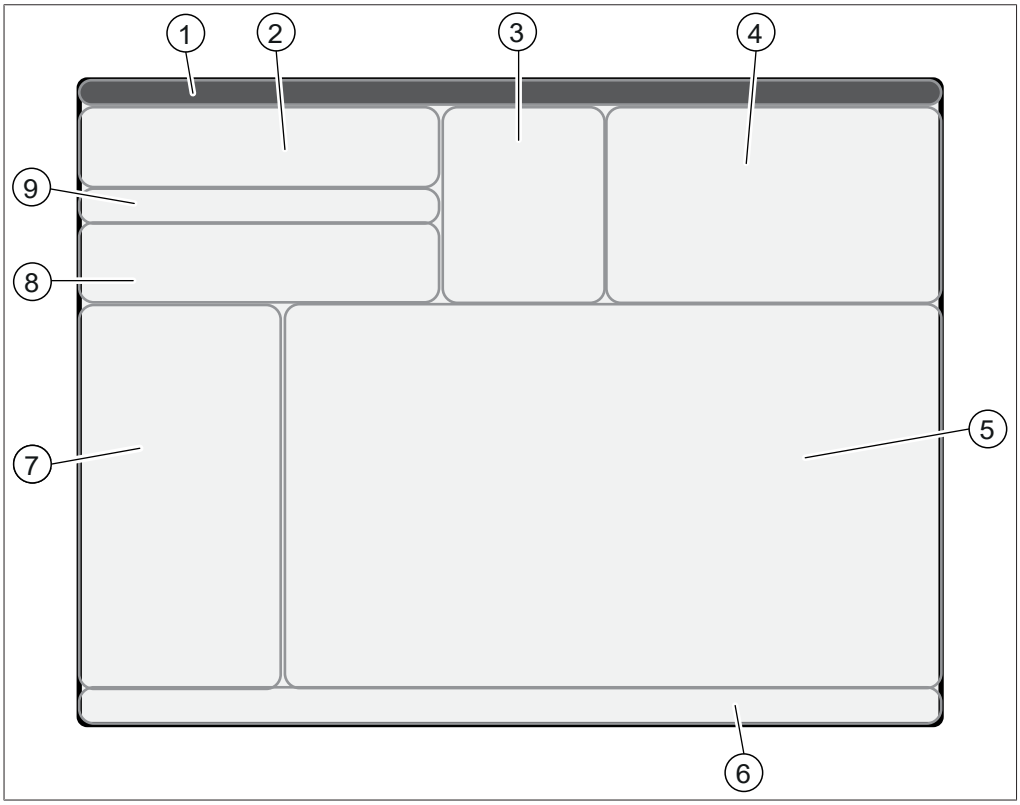


Fig. 6: Display

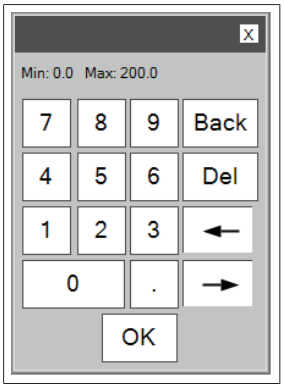
No.	Description	Function
1	*[Menu]* bar	Shows the available menus. See Menu bar
2	*[Conditions]* panel	Shows the properties and default settings of the installed column / cartridge. See Conditions panel
3	*[Wavelength]* panel	Shows available wavelengths and scan options.
4	*[Collection]* panel	Shows collection options. See Chapter 6.1.5 "Collection panel", page 29
5	*[Gradient]* panel	Shows chromatograms and gradient table. See Gradient panel
6	*[Run]* panel	Shows the operation options. See Chapter 6.1.7 "Run panel", page 31
7	*[Solvent selection]* panel	Shows selectable solvents. See Chapter 6.1.8 "Solvent selection panel", page 32
8	*[Detector settings]* panel	Shows selectable detector options and its settings. See Detector selection panel

No.	Description	Function
9	*[Slope detection]* panel	Shows selectable slope detection options. See Chapter 6.1.10 "Slope detection panel", page 33

6.1.2 Enter value

Enter numbers

▶ Tab on an entry field.



⇨ The display shows a dialog box with a numeric input box.

▶ Enter the value.

▶ Tap the button *[OK]*.

⇨ The value is saved.

⇨ The dialog box closes.

Enter names

▶ Tab on an entry field.

⇨ The display shows a dialog with an alphanumeric input box.

▶ Enter the value.

▶ Tap the button *[OK]*.

⇨ The value is saved.

⇨ The dialog box closes.

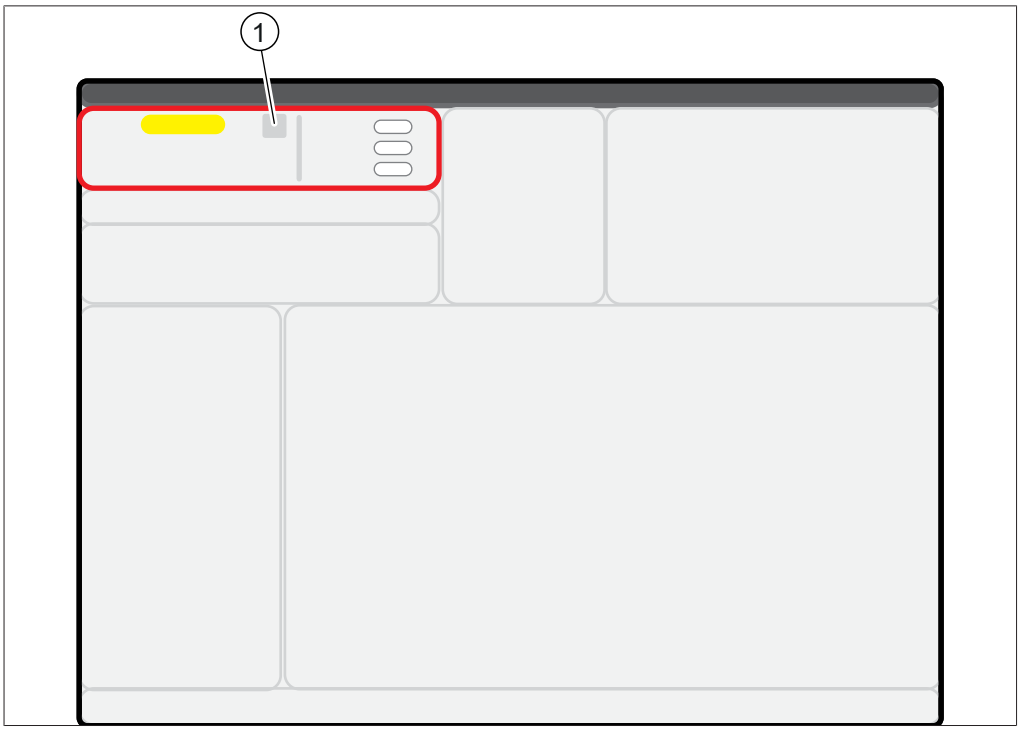
6.1.3 Menu bar

The following menus are available:

Menu	Submenu / Action	Explanation
[File]	*[Open Method]*	Load an existing method. See Chapter 6.4.4 "Selecting an existing method", page 46
	[Save Method]	Save an edited method. See Chapter 6.2.8 "Saving a method", page 42
	[Save Method as]	Save an edited method with another name. See Chapter 6.2.8 "Saving a method", page 42
	[Open Run]	Load a completed run.
	[Print Run Report]	See Chapter 6.8.1 "Printing a run report", page 51
	[Print PDF to USB]	See Chapter 6.8.3 "Sending PDF to USB", page 52
	[Exit]	Exit the Pure software to Windows® system software.
	[Shut down]	The instrument shuts down.
[View]	*[Setup]*	If *[Setup]* is marked up, the instrument is in setup mode.
	[Run in Progress]	If *[Run in Progress]* is marked, a run is in progress.
	[Past Run]	If *[Past Run]* is marked up, the instrument is in the past run mode.

Menu	Submenu / Action	Explanation
[Tools]	*[Solvent Loading]*	Assign a solvent to a solvent line. See Chapter 5.6 "Assigning solvent to solvent lines", page 20
	[Solvent Definition]	Define solvents. See Chapter 6.3 "Editing a solvent", page 42
	[Vapor Sensors and Limits]	Edit the vapor sensor sensitivity. See Chapter 6.2.7 "Editing the vapor sensor sensitivity", page 41
	[Configuration]	System configurations.
	[Calibration and Defaults]	Calibrate the screen.
		Set time and date.
		Reset UV lamp.
		Set alarms
	[Manual control]	Maintenance actions. See Chapter 7.5 "Cleaning the instrument", page 55 See Chapter 8.7 "Resetting the Fraction collector arm", page 63
	[NP<>RP]	Change back and forth between normal phase and reverse phase
	[Product Services]	Override max. pressure limit for cartridges.
	[UV Baseline]	Adjust the baseline to zero during a run.
	[Language]	Select a language.
	[Service]	BUCHI service technicians only
[Help]	*[About]*	The display shows instrument details.
	[View Manual]	The display shows the Operation manual.

6.1.4 Conditions panel



1 Information button
(Information about the selected column)

The conditions area contains the following settings:

Action	Option	Explanation
[Column]	Automatic via RFID	Shows the name of the cartridge installed in the instrument.
[Flow Rate]	Enter value	Edit the default flow rate.
[Duration Units]	Choice of the duration type	The following types are available: minutes / column volumes
[Equilibration]	Enter value	Indicates the period of time or number of column volumes that the mobile phase flows through the column before the sample is injected.
[Run Length]	Enter value	According to the current operation enter the time for the separation.
		According to the current operation enter the number of column volumes required for the separation.

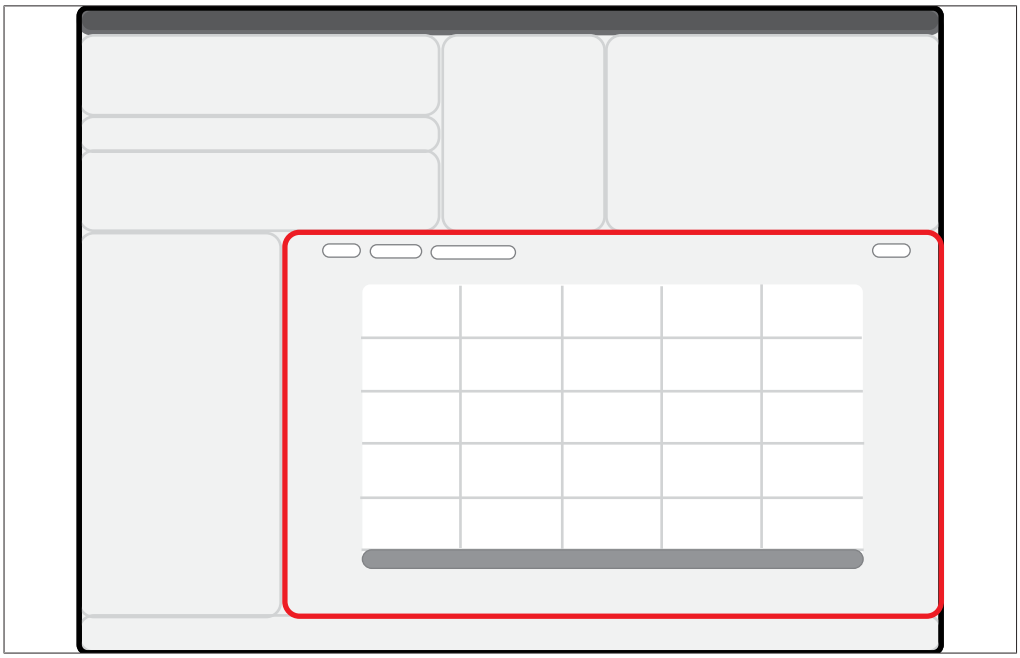
6.1.5 Collection panel

1 Tray number

The collection vial matrix corresponds to the trays. The trays are detected by the auto recognition. The estimated number of vials required for the separation is displayed below the solvent usage list in the lower left corner of the Setup window.
The fraction collection area contains the following settings:

Action	Option	Explanation
Fraction collection options	Select value	The following options are available: *[Collect Peaks]* / *[Collect All]* / *[Collect None]*
[Per-Vial Volume]	View / Enter value	The following values are changeable: *[Peak]* / *[Non-Peaks]*

6.1.6 Gradient panel



Edit the gradient and see separation details.

NOTE

According to the instrument status different options are available.

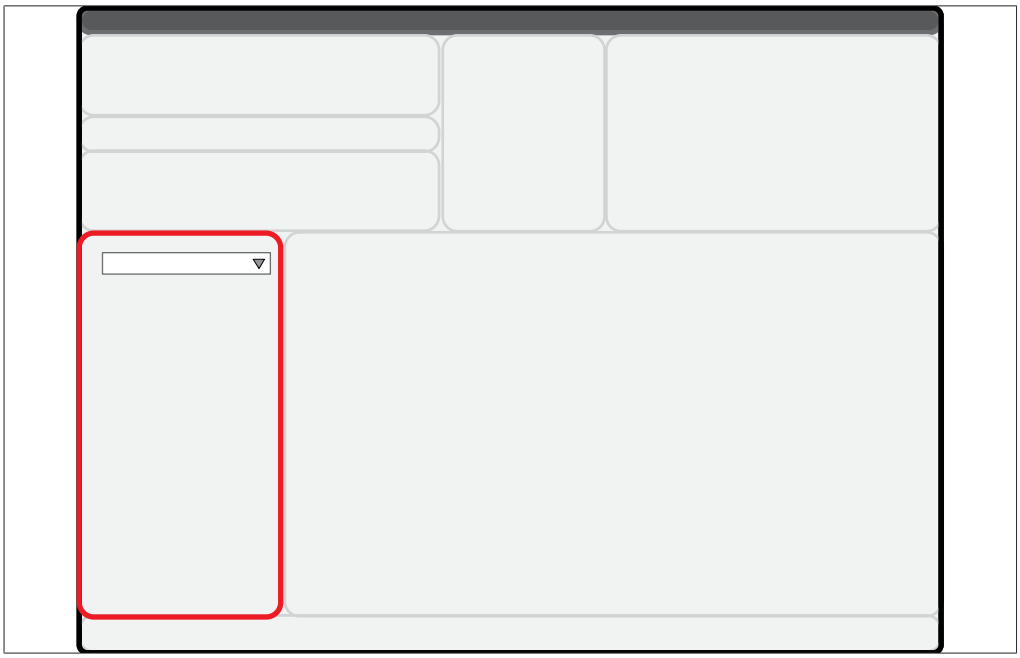
Action	Option	Explanation
[Table]	Create a gradient	See Editing the gradient in tabular mode
[Navigator]	Finding out Flash separation conditions	See Chapter 10.3 "Finding out separation conditions with the navigator", page 67
[UV scan details]	View	Shows the following charts: • 3D (UV / Time/ Wavelength) • 2D (Time / Wavelength) • Absorption maxima • All scan maxima
[Zoom]	Function	Zoom the graph.
[Options]	Select values	Graph options.
[Edit]	Select between the options	The graph is in edit mode. See Editing the gradient in graphic mode
[View]		The graph is in view mode. (No changes possible)
[Zoom]		Zoom the graph.
[Gradient hold]	Function	The gradient is held at the current solvent ratio.
		The gradient continues to the original end-point.
[Auto gradient hold]	Function	The gradient will be held every time the signal goes over the set threshold.

6.1.7 Run panel

The run panel shows available functions according to the current operation.

Symbol	Description	Meaning
▶	*[Start]*	Is used to start the run or re-start the actual operation if the system has been paused.
■	*[Stop]*	Is used to terminate the operation of the system.
❙❙	*[Pause]*	Is used to stop the actual operation. If the system is paused due to an error, this button will change to yellow.
❯❯	*[Advance]*	Is used to advance to the next step during equilibration.

6.1.8 Solvent selection panel

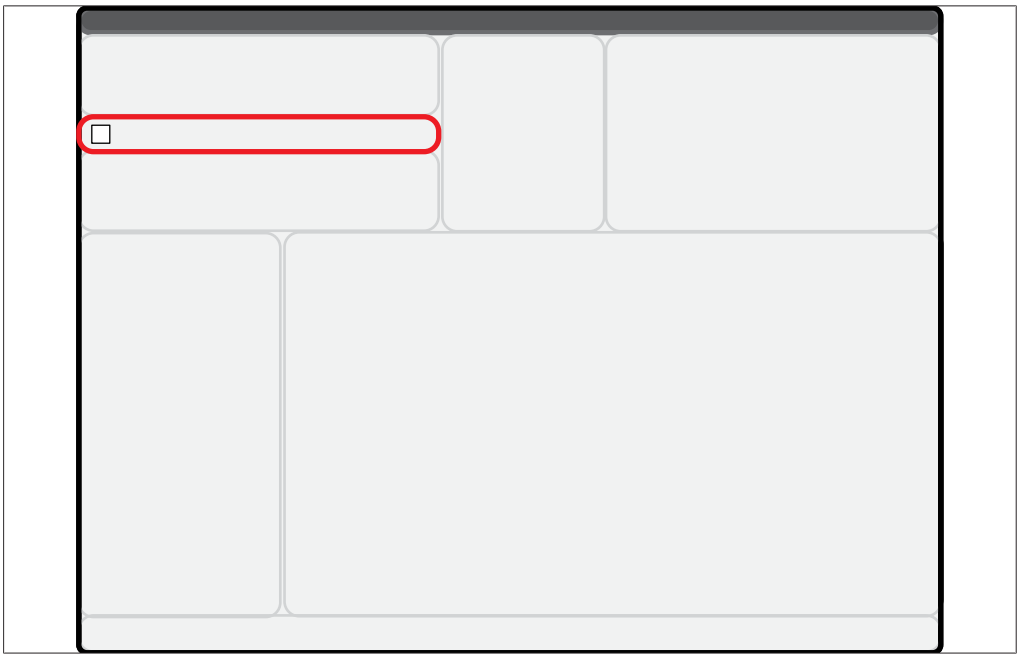


Select solvents for a separation. See Chapter 6.2.2 "Selecting a solvent", page 35

6.1.9 Detector selection panel

Action	Option	Explanation
[UV]	Enable / Disable Select value / Enter value	Action enabled: Low / High Enter values for threshold
		Action disabled: No selection
[Threshold Detection]	Enter value	The threshold defines the value above the fraction collector starts to collect fractions.

6.1.10 Slope detection panel



Action	Option	Explanation
[Slope detection]	Enable / Disable	Action enabled: Fraction collection triggered by slope
		Action disabled: No detection

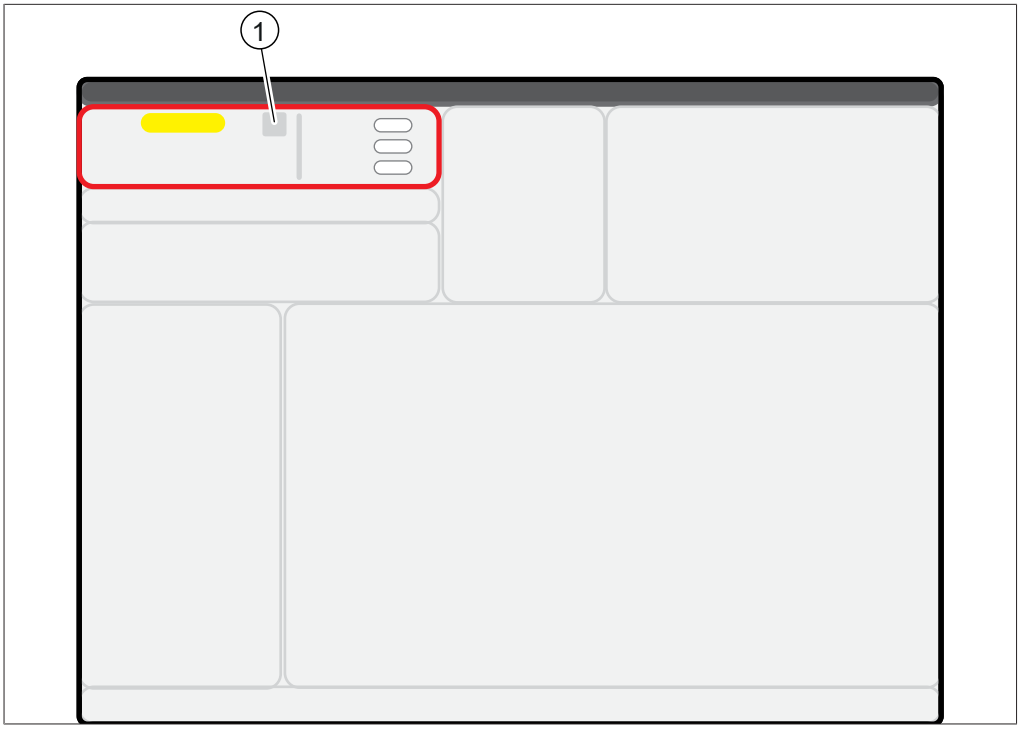
6.2 Editing a method

6.2.1 Selecting a cartridge (Flash mode)

NOTE

The automatic reading of the cartridge information can only be done with specific BUCHI RFID tagged cartridges.

▶ The indication for recognizing the cartridge is a sound.



1 Information button
(Information about the selected column)

Navigation path

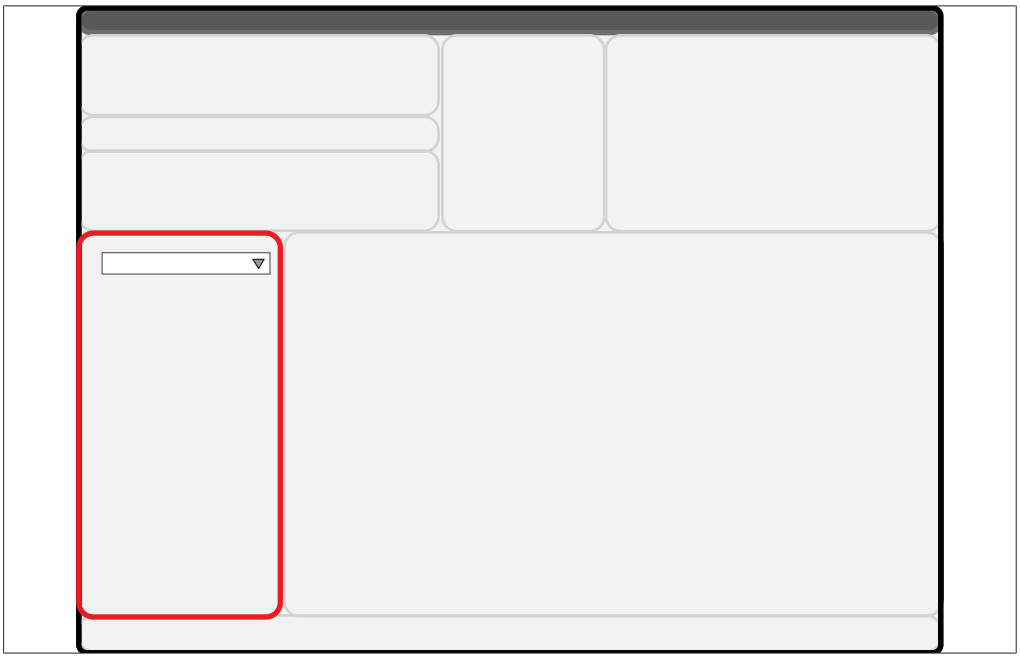
➔ Conditions panel

- ▶ Navigate to the *Conditions selection* panel according the navigation path.
- ▶ Tap the input box next to *[Column]*.

⇨ The display shows a menu with selectable cartridges.

- ▶ Select the cartridges you wish to use.

6.2.2 Selecting a solvent



Navigation path

➔ Solvent selection panel

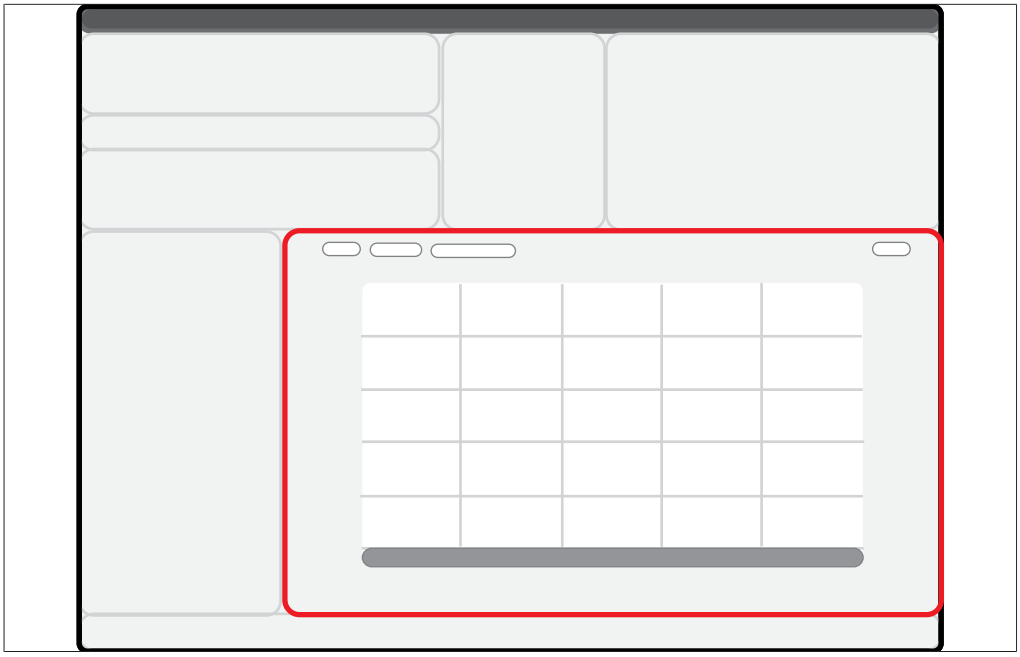
Precondition:

☑ The required solvents lines are connected and assigned. See Chapter 5.6 "Assigning solvent to solvent lines", page 20

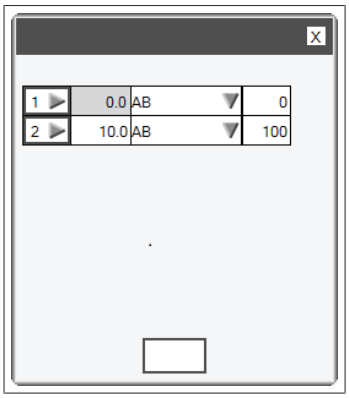
- ▶ Navigate to the *Solvent selection* panel according the navigation path.
- ▶ Tap the drop-down list next to A: .
- ⇨ The display shows a drop-down list with the assigned solvents.
- ▶ Tap the required solvent.
- ⇨ The solvent is selected
- ⇨ The drop-down list closes.
- ▶ Select more solvents for the mobile phase according to your needs.

6.2.3 Editing the gradient

The composition of the mobile phase as a function of time can be indicated by entering the gradient. Solvent lines can be used to generate a binary gradient.



Editing the gradient in tabular mode



The following settings are available:

Action	Option	Explanation
[Min]	Enter value	Enter the time until the value in column *[% 2nd]* is reached.
[Solvents]	Select value	Select solvent line combinations.
[% 2nd]	Enter value	Enter the percentage rate for the second solvent.

Navigation path

➔ Gradient panel

- ▶ Navigate to the *Gradient* panel according the navigation path.
- ▶ Tap the button *[Table]*.

⇨ The display shows the dialog *Gradient Table*.

- ▶ Tap the cell for *[Min]*.

⇨ The display shows a dialog box with a numeric input box.

- ▶ Enter the time.
- ▶ Tap the button *[OK]*.

▶ Tap the cell for *[% 2nd]*.

⇨ The display shows a dialog box with a numeric input box.

▶ Enter the percentage for the second solvent.

▶ Tap the button *[OK]*.

▶ Tap the button *[Close]*.

⇨ The gradient is saved

⇨ The dialog Gradient table closes

⇨ The *Gradient* panel shows the set gradient.

Add additional lines to the Gradient table

▶ Tap the number field (e.g. 1►).

⇨ The display shows a drop-down list with selectable actions.

▶ Select if the line should be added above or below the selected line.

⇨ A line is added.

Deleting lines from the Gradient table

▶ Tap the number field (e.g. 1►).

⇨ The display shows a drop-down list with selectable actions.

▶ Select delete.

⇨ The line is deleted.

Editing the gradient in graphic mode

Navigation path

➔ Gradient panel

▶ Navigate to the *Gradient* panel according the navigation path.

▶ Tap the button *[Edit]*.

⇨ The Display shows a drop-down list.

▶ Select *[Edit]*.

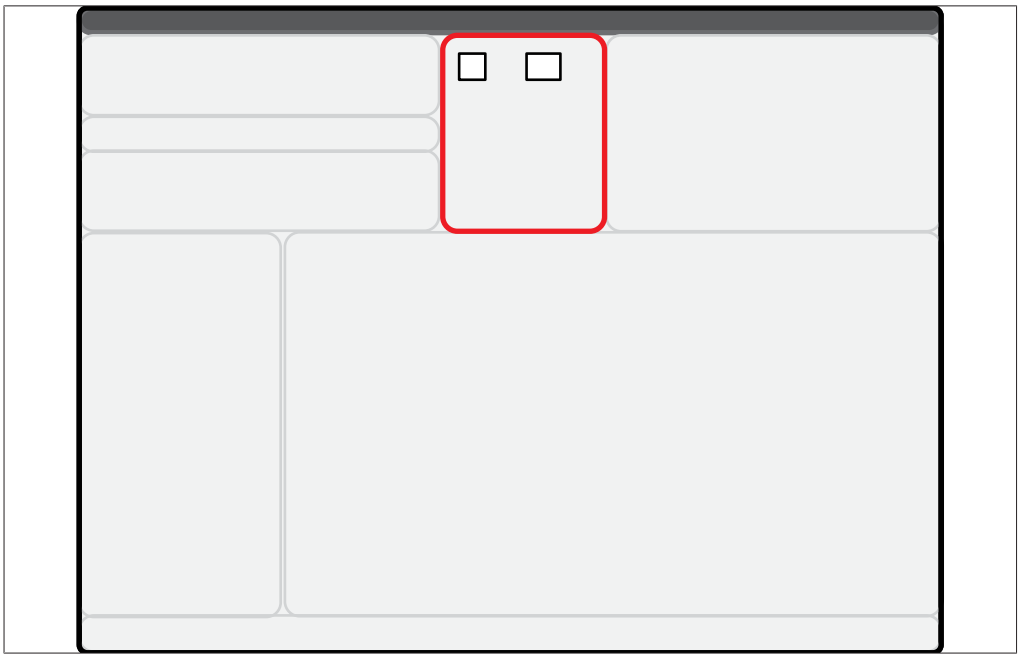
Add steps to the Gradient graphic

▶ Tap on the line at the time for which you want to edit the gradient and drag it to the desired %B, then release.

Deleting steps from the Gradient graphic

▶ To remove a step, drag the point to the baseline or to any gray area around the graph until a red X is visible, then release.

6.2.4 Editing the wavelength for the UV detector



Status Checkbox	Explanation	Explanation
☑	On	The instrument collects fractions.
■	Monitoring	The instrument records the data from the UV detector but does not collect the fractions.
☐	Off	The instrument does not record data from the UV detector and does not collect fractions.

Navigation path

➔ Wavelength selection panel

Precondition:
☑ The UV detector is selected.

- ▶ Navigate to the *Wavelength* panel according the navigation path.
- ▶ Activate the checkbock next to *[UV]*.
- ▶ Tap the input box next to *[UV]*.

⇨ The display shows a dialog box with a numeric input box.

- ▶ Enter a value for the wavelength.
- ▶ Tap the button *[OK]*.

⇨ The dialog box closes.

⇨ The wavelength is saved.

6.2.5 Editing the fraction collection criteria

1 Identifier

The following fraction collection criteria are available:

Criteria	Meaning
[Collect Peaks]	The instrument collects fractions if one detector signal is above the set threshold.
[Collect All]	The instrument collects all the fractions regardless of detection signals.
[Collect None]	The instrument collects no fractions.

NOTE

[Peak] and *[Non-Peaks]* default is the maximum volume of the vial.

Navigation path

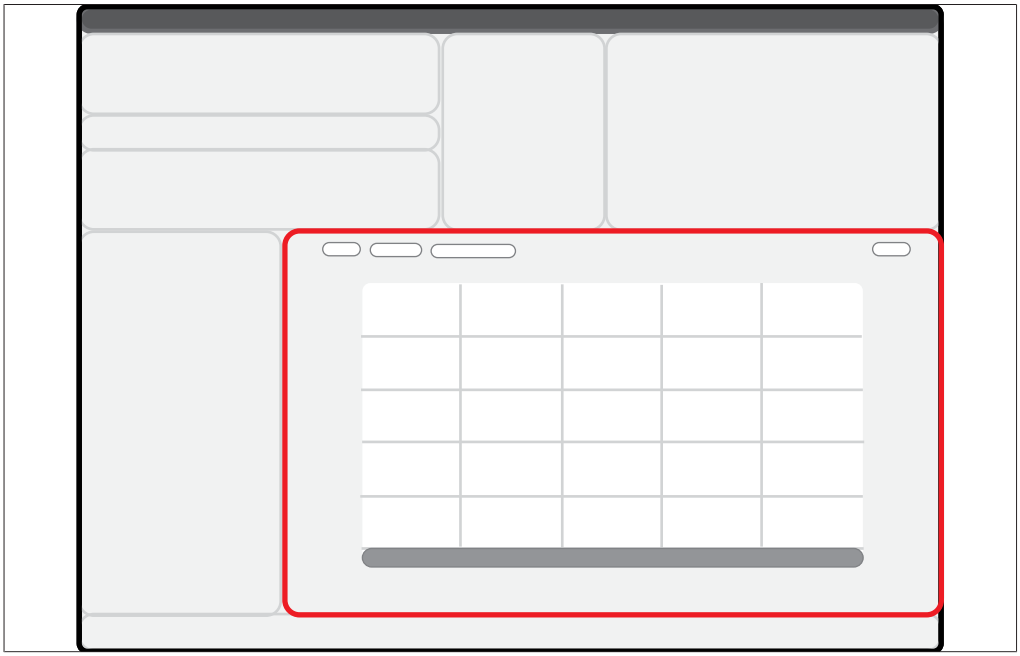
➔ Collection panel

- ▶ Tap the radio button next to criteria you wish to use.
- ⇨ The criteria is selected.
- ▶ Tap the input box next to *[Peak]*.
- ⇨ The display shows a dialog box with a numeric input box.
- ▶ Enter a the volume you wish to collect.
- ▶ Tap the button *[OK]*.
- ⇨ The dialog box closes.
- ⇨ The value for the volume is saved.
- ▶ Tap the input box next to *[Non-Peaks]*.
- ⇨ The display shows a dialog box with a numeric input box.
- ▶ Enter the volume you wish to collect.

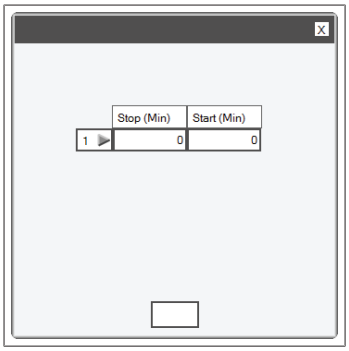
▶ Tap the button *[OK]*.

⇨ The dialog box closes.

6.2.6 Editing the fraction collection time



Program Collect allows to turn off fraction collection for a specific time.
The fraction collector defaults to collect the full run length unless the values from Program Collect override the collection.



Navigation path

➔ Gradient panel

▶ Navigate to the *Gradient* panel according the navigation path.

▶ Tap the button *[Program collect]*.

⇨ The display shows the dialog *Program collect*.

▶ Tap the input box.

⇨ The display shows a dialog box with a numeric input box.

▶ Enter the time.

▶ Tap the button *[OK]*.

⇨ The time is saved.

⇨ The dialog box closes.

Add additional lines to the program collection

▶ Tap the number field (1►).

⇨ The display shows a drop-down list with selectable actions.

▶ Select if the line should be added above or below the selected line.

⇨ A line is added.

Deleting lines from the program collection

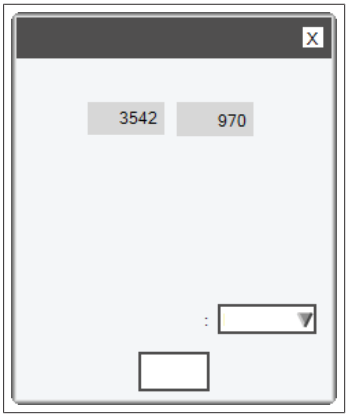
▶ Tap the number field (1►).

⇨ The display shows a drop-down list with selectable actions.

▶ Select delete.

⇨ The line is deleted.

6.2.7 Editing the vapor sensor sensitivity



The vapor sensor detects solvent concentration in the ambient air.
The following sensitivity limits are available:

Sensitivity	Meaning
High	Used for non-volatile solvents
Medium	Compromise between the low and high setting
Low	Used for volatile or semi-volatile solvents
Off	The vapor sensor is off

Navigation path

➔ Tools ➔ Vapor Sensor and Limits

▶ Navigate to the *Vapor Sensors* dialog according to the navigation path.

⇨ The display shows the dialog box *Vapor Sensors*.

▶ Tap the drop-down list next *[Vapor alarm sensitivity]*.

▶ Select the sensitivity value you wish to use.

▶ Tap the button *[Close]*.

⇨ The dialog box closes.

6.2.8 Saving a method

Navigation path

➔ File ➔ Save Method as

▶ Navigate to the *Save Method as* dialog according to the navigation path.

⇨ The display shows the dialog box *Save Method as*.

▶ Tap the input box *[Enter method name]*.

⇨ The display shows a dialog with an alphanumeric input box.

▶ Enter the name of the method.

▶ Tap the button *[OK]*.

⇨ The dialog box closes.

▶ Tap the button *[OK]*.

⇨ The method is saved.

⇨ The dialog box closes.

6.3 Editing a solvent

6.3.1 Adding a new solvent

Navigation path

➔ Tools ➔ Solvent Definition

▶ Navigate to the *Solvent Definition* dialog according to the navigation path.

⇨ The display shows the dialog box *Solvent Definition*.

▶ Tap the button *[Add Solvent]*.

⇨ The display shows the dialog box *Solvent*.

▶ Tap the input box next to *[Name]*.

⇨ The display shows a dialog with an alphanumeric input box.

▶ Enter the name for the solvent.

▶ Tap the button *[OK]*.

⇨ The dialog box closes.

▶ Tap the input box next to *[Info]*.

⇨ The display shows a dialog with an alphanumeric input box.

▶ Enter information to the solvent according to your requirements.

▶ Tap the button *[OK]*.

⇨ The dialog box closes.

▶ Tap the button *[Verify Solvents]*.

⇨ The display shows the dialog box *Solvent Verification*.

▶ Select solvent group for the defined solvent.

▶ Tap the button *[OK]*.

⇨ The dialog box closes.

⇨ The solvent is added.

▶ Tap the button *[Close]*.

⇨ The dialog box *Solvent Definition* closes.

6.3.2 Deleting a solvent

Navigation path

➔ Tools ➔ Solvent Definition

▶ Navigate to the *Solvent Definition* dialog according to the navigation path.

⇨ The display shows the dialog box *Solvent Definition*.

▶ Select the solvent you wish to delete.

▶ Tap the button *[Delete Solvent]*.

▶ Answer the secure question with *[Yes]*.

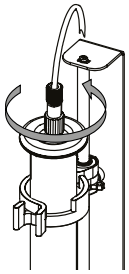
⇨ The solvent is deleted.

6.4 Tasks during a separation

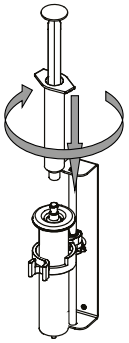
6.4.1 Injecting a sample into the flash system

Injecting a sample into the cartridge

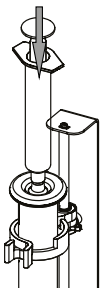
▶ Remove the solvent line from the cartridge.



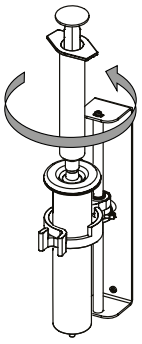
▶ Connect the syringe to the cartridge.



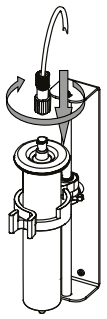
▶ Press the plunger.



▶ Disconnect the syringe.



▶ Connect the solvent line.



6.4.2 Installing and removing a cartridge

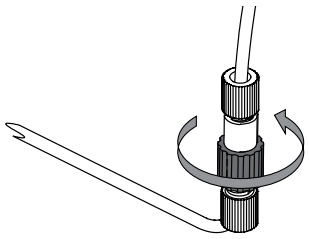
NOTE
Removing is done in reverse sequence.

NOTE
Instead of a cartridge a bypass can be installed.

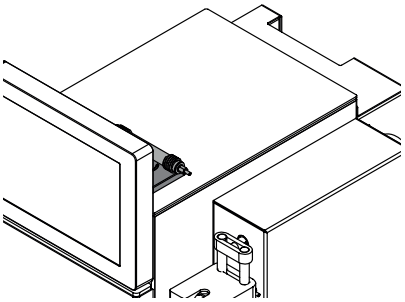
NOTE
The automatic reading of the cartridge information can only be done with specific BUCHI RFID tagged cartridges.

▶ The indication for recognizing the cartridge is a sound.

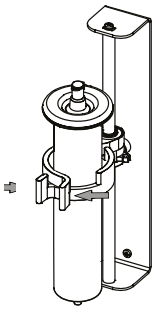
▶ Open the solvent line at the point indicated.



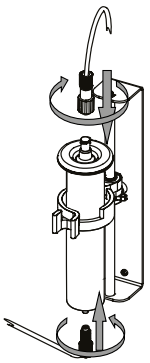
▶ Hold the cartridge above the RFID reader.
▶ Wait until the instrument has taken over the cartridge data.



▶ Attach the cartridge to the cartridge holder.



▶ Attach the solvent lines to the cartridge.

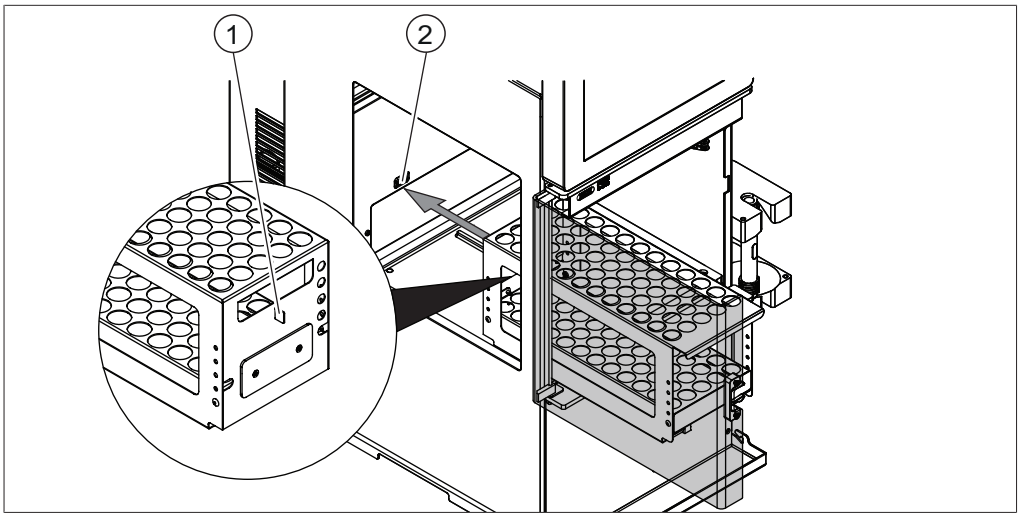


6.4.3 Inserting the fraction collection tray

NOTE

By default the first available tube on each tray is reserved for waste.

Changing the setting. See Chapter 6.4.5 "Selecting values on the dialog box Sample Loading", page 47



1 Tab

2 Optical sensor slot

▶ Place the collection tubes in the collection tray.
▶ Place the trays in the fraction collector bay.
▶ Make sure that the tab is in the optical sensor slot.

6.4.4 Selecting an existing method

Navigation path

➔ File ➔ Open Method

▶ Navigate to the *Open Method* dialog according to the navigation path.

⇨ The display shows the dialog box *Open Method*.

▶ Select the method you wish to use.
▶ The display highlights the selected method black.
▶ Tap the button *[OK]*.

⇨ The method is selected.

⇨ The dialog box closes.

6.4.5 Selecting values on the dialog box Sample Loading

The display shows the dialog box *Sample Loading* during the starting phase of a separation.
The following settings are possible:

Action	Explanation
[Lower flow rate for specified time after injection]	Reduce flow rate for a specified period, when the pressure increases significantly at the start of the run after sample injection.
[Flush 2nd solvent at the end of the run]	Automatically cleaning the system and column.
[Override Start Vial]	Select the start vial according to your needs.

6.5 Performing a Flash separation using a method

6.5.1 Preparing the instrument

Time required:	approx. 30 sec.

Precondition:
☑ All commissioning operations have been completed. See Chapter 5 "Installation", page 18

- ▶ Switch the ***On/Off*** master switch to On.
- ▶ Tap the ***On/Off*** switch.

⇨ The instrument is starting up.

6.5.2 Starting Flash separation using a method

Precondition:
☑ The instrument is prepared. See Chapter 6.5.1 "Preparing the instrument", page 47
☑ The required solvents are connected and assigned. See Chapter 5.6 "Assigning solvent to solvent lines", page 20
☑ The sample is prepared.
☑ The waste bottle is empty.

- ▶ Open the protection shield.
- ▶ Place the fraction collection trays inside the instrument. See Chapter 6.4.3 "Inserting the fraction collection tray", page 46
- ▶ Close the protection shield.
- ▶ Open an existing method. See Chapter 6.4.4 "Selecting an existing method", page 46
- ▶ Tap the button *[OK]*.
- ▶ Tap the button *[Start]* on the *Run* panel.
- ▶ According the requirements adjust the file name.
- ▶ Tap the button *[OK]*.

⇨ The display shows the dialog box *Sample Loading*.

- ▶ According the requirements adjust the settings. See Chapter 6.4.5 "Selecting values on the dialog box Sample Loading", page 47

▶ Follow the instructions on the display.

⇨ Installing the cartridge. See Chapter 6.4.2 "Installing and removing a cartridge", page 45

⇨ Introducing the sample into the system. See Chapter 6.4.1 "Injecting a sample into the flash system", page 44

6.5.3 Changings during a separation

NOTE

Parameters that can be edited are highlighted in green

Possibilities to edit the gradient during a separation:

- Change the gradient. See Editing the gradient in graphic mode
- Hold the gradient. See Gradient panel
- Auto gradient hold. See Gradient panel

6.5.4 Ending a Flash separation

NOTE

The separation extends automatically by 5 minutes if the baseline at the end of the separation is not below the set threshold.

Precondition:

☑ The display shows the dialog box *Separation End*.

▶ According to the requirements extend the separation time by 5 minutes.

Precondition:

☑ The display shows the dialog box *Run completed*.

▶ Follow the instructions on the display.

⇨ Removing the cartridge. See Installing and removing a cartridge

6.5.5 Shutting down the instrument

Navigation path
➔ File

Precondition:

☑ The separation process has ended.

▶ Purge the instrument with purging solvent. See Chapter 7.5 "Cleaning the instrument", page 55

▶ Navigate to the *[File]* menu via the navigation path.

▶ Tap the action *[Shut down]*.

▶ Confirm the secure question with *[Yes]*.

⇨ The instrument is shutting down.

6.6 Performing a Flash separation manually

6.6.1 Preparing the instrument

Time required:	approx. 30 sec.

Precondition:

☑ All commissioning operations have been completed. See Chapter 5 "Installation", page 18

▶ Switch the ***On/Off*** master switch to On.

▶ Tap the ***On/Off*** switch.

⇨ The instrument is starting up.

6.6.2 Starting Flash separation manually

Precondition:

☑ The instrument is prepared. See Chapter 6.6.1 "Preparing the instrument", page 48

☑ The required solvents are connected and assigned. See Chapter 5.6 "Assigning solvent to solvent lines", page 20

☑ The sample is prepared.

☑ The waste bottle is empty.

▶ Open the protection shield.

▶ Place the fraction collection trays inside the instrument. See Chapter 6.4.3 "Inserting the fraction collection tray", page 46

▶ Close the protection shield.

▶ Select a cartridge. See Chapter 6.2.1 "Selecting a cartridge (Flash mode)", page 33

▶ Tap the drop-down list next to A: on the *Solvent Selection* panel.

⇨ The display shows a drop-down list with the assigned solvents.

▶ Tap the required solvent.

⇨ The solvent is selected

⇨ The drop-down list closes.

▶ Select more solvents for the mobile phase according to your needs.

▶ Edit the gradient according to your needs. See Chapter 6.2.3 "Editing the gradient", page 35

▶ Select the sample collection in the *Collection* panel. See Chapter 6.2.5 "Editing the fraction collection criteria", page 39

▶ Select the collection criteria in the *Collection criteria* panel.

▶ Tap the button *[Start]* on the *Run* panel.

⇨ The display shows the dialog box *Sample Loading*.

▶ According the requirements adjust the settings. See Chapter 6.4.5 "Selecting values on the dialog box Sample Loading", page 47

▶ Follow the instructions on the display.

⇨ Installing the cartridge. See Installing and Removing a cartridge

⇨ Introducing the sample into the system. See Chapter 6.4.1 "Injecting a sample into the flash system", page 44

6.6.3 Changings during a separation

NOTE

Parameters that can be edited are highlighted in green

Possibilities to edit the gradient during a separation:

- Change the gradient. See Editing the gradient in graphic mode
- Hold the gradient. See Gradient panel
- Auto gradient hold. See Gradient panel

6.6.4 Ending a Flash separation

NOTE

The separation extends automatically by 5 minutes if the baseline at the end of the separation is not below the set threshold.

Precondition:

☑ The display shows the dialog box *Separation End*.

▶ According to the requirements extend the separation time by 5 minutes.

Precondition:

☑ The display shows the dialog box *Run completed*.

▶ Follow the instructions on the display.

⇨ Removing the cartridge. See Installing and removing a cartridge

6.6.5 Shutting down the instrument

Navigation path

➔ File

Precondition:

☑ The separation process has ended.

▶ Purge the instrument with purging solvent. See Chapter 7.5 "Cleaning the instrument", page 55

▶ Navigate to the *[File]* menu via the navigation path.

▶ Tap the action *[Shut down]*.

▶ Confirm the secure question with *[Yes]*.

⇨ The instrument is shutting down.

6.7 Identifying fractions

6.7.1 Identifying fractions by peak

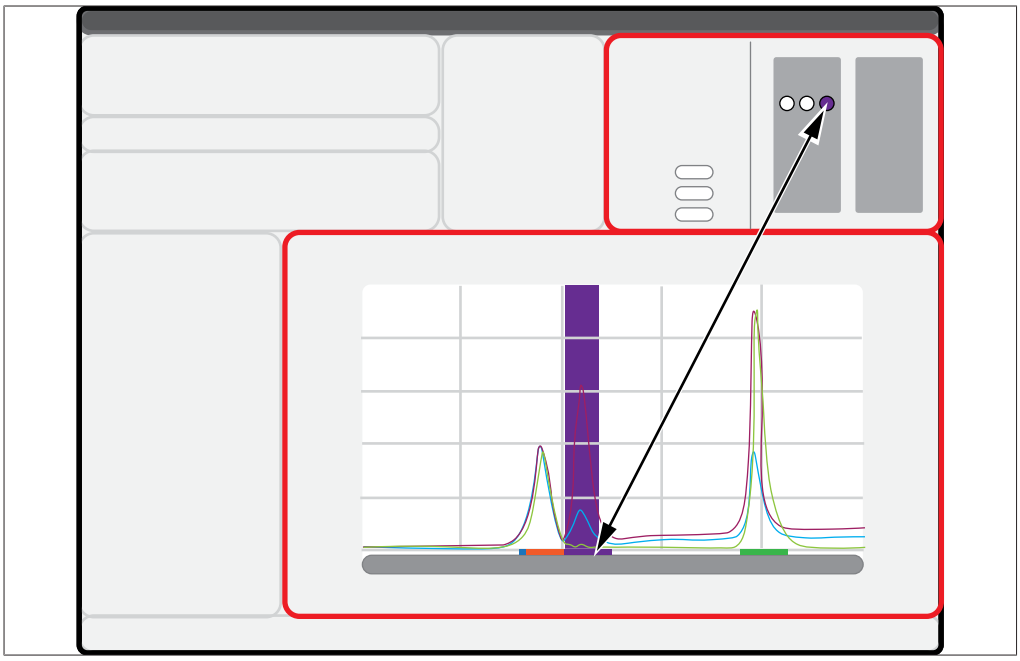


Fig. 7: Identifying fractions

Navigation path

➔ Gradient panel

Precondition:
☑ A separation is finished.

- ▶ Navigate to the *Gradient* panel according the navigation path.
- ▶ Tap the peak with the target value.

⇨ The *Collection* panel shows the corresponding vial.

6.7.2 Identifying fractions per vial

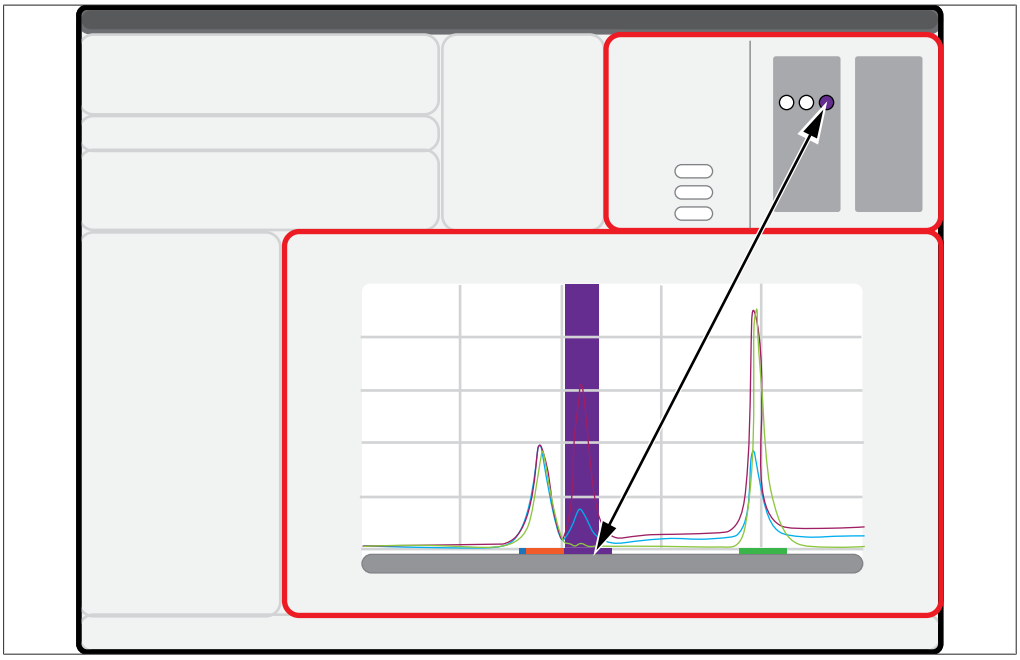


Fig. 8: Identifying fractions

Navigation path

➔ Collection panel

Precondition:
☑ A separation is finished.

- ▶ Navigate to the *Collection* panel according the navigation path.
- ▶ Tap the target vial.

⇨ The *Gradient* panel shows the corresponding peak.

6.8 Importing and exporting data

6.8.1 Printing a run report

Navigation path

➔ File ➔ Print Run Report

Precondition:
☑ The instrument is in past run mode.

- ▶ Navigate to the *Print Run Report* dialog according to the navigation path.

⇨ The display shows the Windows® print dialog.

- ▶ Select your printer.
- ▶ Tap the button *[OK]*.
- ⇨ The report is printed.

6.8.2 Sending data to USB

Navigation path

➔ Run panel

Precondition:
☑ The instrument is in past run mode.

- ▶ Connect a USB storage device to the instrument.
- ▶ Navigate to the *Run* panel according the navigation path.
- ▶ Tap the button *[Data to USB]*.
- ⇨ The instrument saves an Excel file to the USB storage device.
- ▶ Confirm the complete message.
- ⇨ The data is stored.

6.8.3 Sending PDF to USB

Navigation path

➔ Run panel

Precondition:
☑ The instrument is in past run mode.

- ▶ Connect a USB storage device to the instrument.
- ▶ Navigate to the *Run* panel according the navigation path.
- ▶ Tap the button *[PDF to USB]*.
- ⇨ The instrument saves a PDF file to the USB storage device.
- ▶ Confirm the complete message.
- ⇨ The data is saved.

7 Cleaning and servicing

NOTE

Users may only carry out the servicing and cleaning operations described in this section.

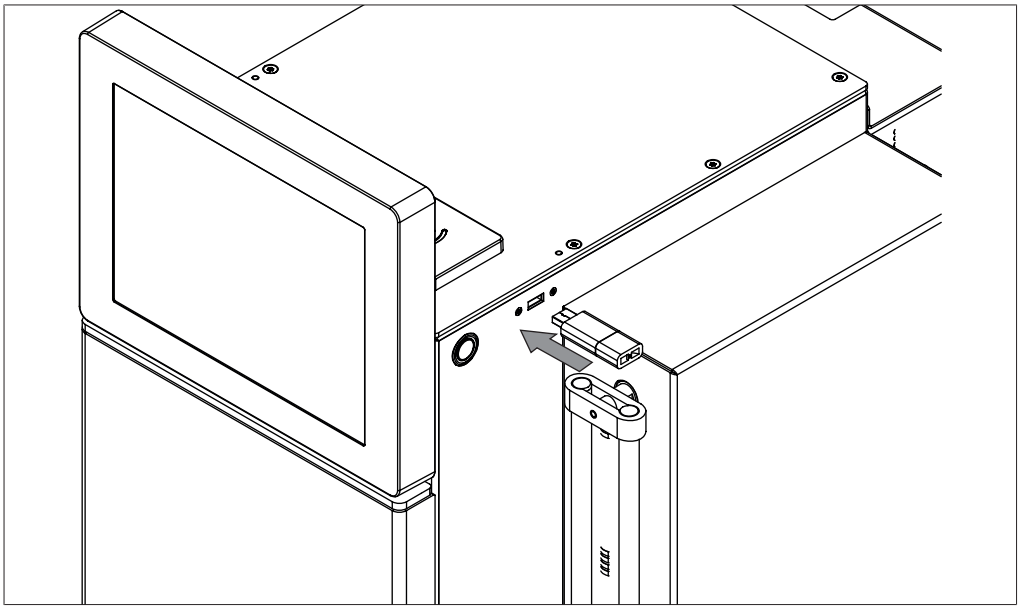
Any servicing and repair work which involves opening up the casing may only be carried out by BUCHI service technicians.

- ▶ Use only genuine BUCHI consumables and spare parts in order to ensure correct operation of the device and preserve the warranty.

7.1 Regular maintenance work

Component	Action	Frequency
Pumps and valves	▶ Purge the instrument with purging solvent. See Chapter 7.5 "Cleaning the instrument", page 55	Daily
Tubing	▶ Check for leaks. If a leak is observed, resolve the issue before continuing.	Daily
Fittings	▶ Inspect fittings; if solid material is deposited on a fitting, clean and tighten (replace) the fitting before continuing.	Daily
Drain lines	▶ Check all drain lines to ensure that liquid can flow through them to the waste container	Daily
Waste bottle	▶ Empty the waste bottle	Daily
Cartridge holder	▶ Check the holding capability of the cartridge holder. ▶ Check if the screws are tightened.	Weekly
Filters	▶ Check the filters in the solvent bottles and clean if necessary.	Weekly
Fittings	▶ Check and if necessary tighten the fitting that secures the tubing from the mobile phase reservoir manifold to the inlet check valve housing	Weekly
Data	▶ Perform a data backup	Weekly
Casing	▶ Wipe down the casing with a damp cloth. ▶ If heavily soiled, use ethanol or a mild detergent.	Weekly
Warning symbols	▶ Check that the warning symbols on the instrument are legible. ▶ If they are dirty, clean them.	Weekly
Display	▶ Wipe down the display with a damp cloth.	Monthly

7.2 Carrying out a data backup



Navigation path

➔ File ➔ Exit

- ▶ Navigate to the *Exit* dialog according to the navigation path.
- ▶ Confirm the secure question.
- ⇨ The Pure software is shutting down.
- ⇨ The display shows a Windows® system.
- ▶ Connect a USB storage device to the instrument.
- ▶ Open the Windows® Explorer.
- ▶ Navigate to the data you wish to backup. See Chapter 10.2 "Folder locations", page 67
- ▶ Copy the needed data to the USB storage devices.

7.3 Calibrating the display

Navigation path

➔ Tools ➔ Calibration and Defaults

- ▶ Navigate to the *Calibration and Defaults* dialog according to the navigation path.
- ▶ Tap the button *[Calibrate]*.
- ▶ Follow the instructions on the display.

7.4 Cleaning the check valve

NOTE

Most check valve problems can be solved by pumping a strong solution of liquid laboratory grade detergent through the check valves at a rate of 20 mL/min for one hour.

Pumping detergent through the check valves

Materials needed:

- Liquid Laboratory Detergent
- Isopropanol/Water (50/50) or Methanol/Water (50/50)

Navigation path

➔ Tools ➔ Manual Control ➔ Column Flushing...

Precondition:

☑ A bypass is installed. See Installing and removing a column

▶ Navigate to the *Column Flushing* dialog according to the navigation path.

Sonicate the check valve

Materials needed:

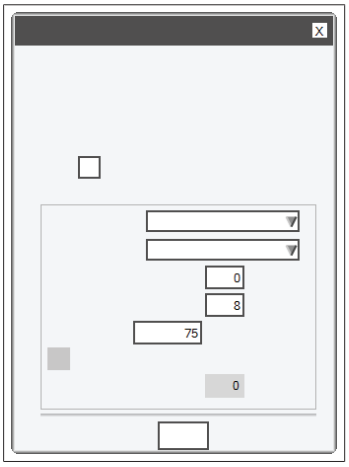
- Open-end wrench, ½”, 9/16" x 5/16"
- Torque wrench

▶ Switch the On/Off master switch to Off.
▶ Disconnect the mobile phase tubing from the inlet (bottom) of the pump head using the 9/16” open-end wrench.
▶ Disconnect the mobile phase outlet tubing from the top of the pump head using the 5/16” open end wrench.
▶ Remove both check valve housings from the pump head using the ½” open-end wrench.

⇨ The check valve capsule is accessible.

▶ Sonicating the check valve for 10 min in the appropriate solvent.
▶ Install the check valve.
▶ Install the check valve housings back into the pump head.
▶ Tighten the check valve housing to 75 inch pounds with the ½” torque wrench.

7.5 Cleaning the instrument



Navigation path

➔ Tools ➔ Manual Control ➔ Column Flushing...

Precondition:

☑ A purging solvent is assigned to the instrument. See Chapter 5.6 "Assigning solvent to solvent lines", page 20

▶ Install a bypass. See Installing and removing a column

- ▶ Navigate to the *Column Flushing* dialog according to the navigation path.
- ▶ Enter the required data according to your needs.

8 Help with faults

8.1 Faults, possible causes and solutions (general)

Malfunction	Possible cause	Solution
The instrument does not power up	Power is not being supplied to the system	▶ Verify that the power cord is plugged in. ▶ Make sure that the voltage, amperage and frequency meet the instrument specifications. ▶ Make sure that both power switches are switched on. ▶ Verify that the fuse wire is not broken and fuses are correctly installed in the instrument.
System shuts down automatically	Major fluctuations in line power are present	▶ Connect system to a Uninterrupted Power Supply line.
The touch screen is not responsive	The touch screen is out of calibration	▶ Recalibrate the touch screen.

8.2 Faults, possible causes and solutions (cartridge)

Malfunction	Possible cause	Solution
Cartridge is not detected	RFID tag is not facing the RFID reader	▶ Turn cartridge so that RFID tag faces RFID reader.
	RFID tag is bad	▶ Use new cartridge.

8.3 Faults, possible causes and solutions (solvent delivery)

Malfunction	Possible cause	Solution
No solvent flow	Empty solvent bottle	▶ Refill the solvent bottle.
	Pump not primed	▶ Prime the pump. ▶ Remove the check valve and clean it by sonicating the check valve in IPA. ▶ If sonication does not work replace the check valve with a new check valve.
	Air bubbles in solvent line	▶ Prime the pump.
	Pump seals worn out	▶ Replace the pump seals.
Pulsation of pump	Open or close time of the inlet or outlet valves are not correct	▶ Rinse the pump module with high flowrate with ethanol or hot distilled water. ▶ Change check valves.
	Residues in solvent	
	Sealing abrasion outlet valve	

Malfunction	Possible cause	Solution
Inconsistent solvent flow	Loose fitting/air leak into the pump	▶ Find the loose fitting between mobile phase reservoir manifold and pump inlet fitting and tighten it up.
	Liquid leak/pump seals worn out	▶ Fix the leak/replace the pump seals.
	Pump head temperature reaches solvent boiling temperature, causing the pump to lose prime and stop flow (this is likely to occur when running methods with highly volatile solvents such as diethyl ether and methylene chloride)	▶ Premix the solvents to reduce solvent volatility. ▶ Place the highly volatile solvent bottle in an ice bath to eliminate boiling.
System pump pressure is higher than expected	Blocked solvent lines	▶ Find the blocked lines and replace it.
	Over-tightened fitting	▶ Loosen the fitting or replace it.
	Blocked columns or fluidic path	▶ Locate the component that caused the blockage, repair, or replace the component.
Leaks	Fitting connection not tight	▶ Find the loose fitting and tighten it up.
	Damaged solvent line	▶ Find the damaged solvent line and replace it.
Pump not running	Pump sensor cable becomes disconnected	▶ Locate the cable and reconnect to the pump sensor.
	Pump power cable becomes disconnected	▶ Locate the power cable and reconnect to the main board or to the pump.
Incorrect flow path	Incorrect fluidic connections to/from the mode switching valve	▶ Check/correct the fluidic connections.

8.4 Faults, possible causes and solutions (fraction collection)

Malfunction	Possible cause	Solution
Liquid not being collected in fraction tubes	Incorrect fraction collection settings	▶ Verify that fraction collection information is set properly.
Liquid not centered in fraction tube	Fraction collector is not calibrated	▶ Recalibrate the fraction collector.
Fraction collector (FC) arm does not move	Fraction collector arm did not home properly	▶ Reset the Fraction collector arm.
	Fraction collector arm motor is slipping	▶ Tighten the motor coupler.
	Fraction collector arm is obstructed	▶ Check for cable or burr in the fraction collector arm path and remove any obstruction.

Malfunction	Possible cause	Solution
Tray not detected	RFID tag is bad	▶ Put another tray into the same position to see if it is recognized to confirm the cause. ▶ Replace RFID tag.

8.5 Faults, possible causes and solutions (detection)

Malfunction	Possible cause	Solution
No UV signal	UV light burned out	▶ Replace the UV light.
Low UV signal	Dirty flow cell	▶ Clean the flow cell.

8.6 Error messages

Error message	Possible cause	Solution
Instrument Alarm: Solvent pump: Communication to the pump cannot be established.	Serial communication disturbed	▶ Restart the instrument.
Instrument Alarm: Solvent pump: Motor overloading.	-	▶ Contact BUCHI Customer Service.
Instrument Alarm: Solvent pump: Motor regulation error.	Hardware error solvent pump	▶ Contact BUCHI Customer Service.
Instrument Alarm: Solvent pump: Power supply error.	Hardware error solvent pump	▶ Contact BUCHI Customer Service.
Instrument Alarm: Solvent pump: Solvent pump motor fan is not working.	Hardware error fan solvent pump	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Communication error occurred.	Serial communication disturbed	▶ Restart the instrument.
Instrument Alarm: UV detector: Bad block of High Voltage (HV) generator for lamp or disconnected lamp or bad lamp.	Lamp defect No lamp Hardware error UV detector	▶ Check the lamp and restart instrument. ▶ Contact BUCHI Customer Service.

Error message	Possible cause	Solution
Instrument Alarm: UV detector: Bad power supply of lamp heater voltage.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Bad power supply of lamp anodic voltage.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Bad power supply of detector analog or digital voltage.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: 4th cycle of lamp ignition fails.	Lamp defect	▶ Check the lamp and restart instrument.
Instrument Alarm: UV detector: Lamp spontaneously douse during unit working.	Lamp defect	▶ Check the lamp and restart instrument.
Instrument Alarm: UV detector: Lamp ignition fails after short douse in AUTOZERO function and repeated High Voltage impulse and heater cycle fails too.	Hardware error UV detector.	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Bad identification of light peak caused by low light intensity.	Lamp defective/ Flow cell dirty	▶ Check the lamp and restart instrument.
Instrument Alarm: UV detector: Bad identification of light peak caused by unworkable light intensity.	Lamp defective/ Flow cell dirty	▶ Check the lamp and restart instrument.

Error message	Possible cause	Solution
Instrument Alarm: UV detector: Low light intensity was found on some photo elements of CCD sensor.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Spontaneously failure on analog or digital power supply.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Error or base offset of unit, bad CCD sensor, monochromator is open.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Instrument Alarm: UV detector: Secondary lamp is not working or lamp spontaneously douse.	2nd lamp defect	▶ Check the lamp and restart instrument.
Instrument Alarm: UV detector: Any fan is not working or any fan is disconnected or mechanical blocked.	Hardware error UV detector	▶ Contact BUCHI Customer Service.
Solvent List File	Solvent list file corrupted	▶ Shutdown the Pure software. ▶ Delete the solvent list. ▶ Restart the Pure software.
Solvent Lines File: Invalid program execution.	Solvent lines file corrupted	▶ Shutdown the Pure software. ▶ Delete the solvent list. ▶ Restart the Pure software.
Solvent Defaults File: The solvent information file and the default solvent information file are missing.	Software damaged	▶ Uninstall and reinstall software.
Using Default Solvent List: System defaults used instead of actual resource.	Solvent file has been deleted	▶ Restart the instrument.

Error message	Possible cause	Solution
Solvent Pressure: Pressure limit has been exceeded.	Blockage in the line	▶ Remove column. ▶ Replace with bypass. ▶ Determine if column is not the source of blockage. ▶ If not column is the source of blockage, then check all fluidic lines.
	Sample crashing/precipitate	▶ Purge lines/system with a strong or appropriate solvent that will dissolve the sample
	Valve stuck in incorrect position	▶ Reset valve position. ▶ Contact BUCHI Customer Service.
Error in solvent line calibration file.	Calibration file of solvent lines damaged	▶ Shutdown the Pure software. ▶ Delete the calibration list. ▶ Restart the Pure software.
Sensor pressure calibration file	Pressure sensor calibration file damaged.	▶ Shutdown the Pure software. ▶ Delete the pressure value list. ▶ Restart the Pure software.
Instrument Alarm: Vapor	Vapor sensor settings are set too sensitive	▶ Change the vapor limits to a lower sensitivity. See Chapter 6.2.7 "Editing the vapor sensor sensitivity", page 41
	Leaks	▶ Check for any leaks in the solvent flow paths.
	Solvent vapors in work area	▶ Solvent vapors in the work area may set on the alarm. Use the instrument in a hood or well ventilated area with no open solvents near the system.
Vapor sensor no signal	Vapor sensor is not connected or is defect	▶ Check the cable to the vapor sensor.
Instrument Alarm: Watchdog	Timing/communication issue in software	If in setup mode: ▶ Restart the instrument. ▶ If in run mode: ▶ Press reset. ▶ Restart after the run is finish.
Solvent Pressure	Solvent pressure limit has been exceeded	▶ Remove column. ▶ Replace with bypass. ▶ Determine if column is not the source of blockage. ▶ If not column is the source of blockage, then check all fluidic lines.

Error message	Possible cause	Solution
Fraction Collector	Arm is obstructed	▶ Check arm path to make sure there are no obstructions. ▶ Reset the Fraction Collector arm. See Chapter 8.7 "Resetting the Fraction collector arm", page 63
	Fraction collector arm did not home properly	▶ Tighten the motor coupler. ▶ Contact BUCHI Customer Service.
	Fraction collector arm motor is slipping	▶ Contact BUCHI Customer Service.
	Home position sensor is bad	▶ Contact BUCHI Customer Service.
	Fraction collector arm motor has no power	▶ Contact BUCHI Customer Service.
Low Disk Space	The disk space on this unit is almost full.	▶ Back up and delete data. ▶ Contact BUCHI Customer Service.

8.7 Resetting the Fraction collector arm

Navigation path

➔ Tools ➔ Manual Control ➔ Fraction Collector Arm Reset

▶ Navigate to the *Fraction Collector Arm Reset* dialog according to the navigation path.
▶ Confirm the secure question.
⇨ The Fraction collector arm is resetted.

9 Taking out of service and disposal

9.1 Taking out of service

- ▶ Switch off the instrument and disconnect it from the mains power supply.
- ▶ Remove all tubing and communication cables from the device.

9.2 Disposal

The operator is responsible for proper disposal of the instrument.

- ▶ When disposing of equipment observe the local regulations and statutory requirements regarding waste disposal.
- ▶ When disposing, observe the disposal regulations of the materials used. Materials used see Chapter 3.5 "Technical data", page 14

9.3 Returning the instrument

Before returning the instrument, contact the BÜCHI Labortechnik AG Service Department.
https://www.buchi.com/contact

10 Appendix

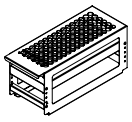
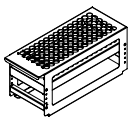
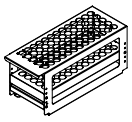
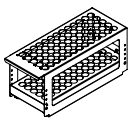
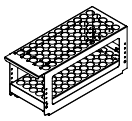
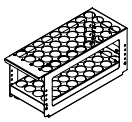
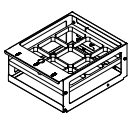
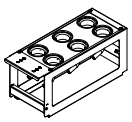
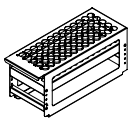
10.1 Spare parts and accessories

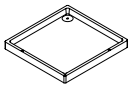
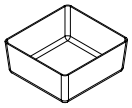
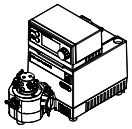
Use only genuine BUCHI consumables and spare parts in order to ensure correct, safe and reliable operation of the system.

NOTE

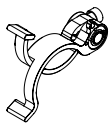
Any modifications of spare parts or assemblies are only allowed with the prior written permission of BUCHI.

10.1.1 Accessories

	Order no.	Image
Pure rack type 1 Metal rack for 12 x 75 mm glass tubes, 1 pc.	11066672	
Pure rack type 2 Metal rack for 13 x 100 mm glass tubes, 1 pc.	11066673	
Pure rack type 3 Metal rack for 16 x 125 mm glass tubes, 1 pc.	11066674	
Pure rack type 4 Metal rack for 16 x 150 mm glass tubes, 1 pc.	11066675	
Pure rack type 5 Metal rack for 18 x 150 mm glass tubes, 1 pc.	11066676	
Pure rack type 6 Metal rack for 25 x 150 mm glass tubes, 1 pc.	11066677	
Pure rack type 7 Metal rack for 9 squared bottles of 480 mL, 1 pc.	11068452	
Pure rack type 8 (funnel rack) Metal rack for 6 funnels	11069407	
Pure rack type 9 Metal rack for 16 x 100 mm glass tubes, 1 pc.	11069242	

	Order no.	Image
Solvent bottle platform kit Solvent bottle platform on top of the instrument. For maximum 4 bottles (volume 4 L each)	11069285	
Retaining container Retaining container for solvent bottle platform for more safety regarding leaking	11068468	
Loading Pump with flow rates from 2.5 to 250 mL/min, incl. tubing and fitting	11071418	

10.1.2 Spare parts

	Order no.	Image
Touch-screen stylus	11068360	
Pure Clamp for Pure Essential Cartridge Stand Universal cartridge holder	11074604	
Solvent line set Set with 2 solvent level lines, ferrule, fitting and adapters	11071873	

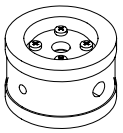
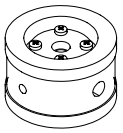
10.1.3 Tools and adapter kits

	Order no.
Luer lock connection set Set of 2 luer lock adapters	11068242
Advanced adapter kit flash Tube cutter, Fittings (1/8", 1/16"), Tubing (pneumatic, FEP 1/8", FEP 1/16"), Luer Lock adapters, Pneumatic reduction, Fuses, Injection valve	11068361

10.1.4 Tubes

	Order no.
Pure Glass Tubes 13 x 100 mm 1000 pcs.	148623414
Pure Glass Tubes 16 x 150 mm 1000 pcs.	148623416
Pure Glass Tubes 18 x 150 mm 500 pcs.	148623410
Pure Glass Tubes 25 x 150 mm 500 pcs.	148623411
Pure Squared bottles 480 mL 24 pcs.	148623412

10.1.5 Wear parts

	Order no.	Image
Pure UV flow cell 0.3 mm For all C-8xx	11068210	
Pure UV flow cell 1.3 mm For all C-8xx, for enhanced sensitivity	11068214	
Pure Solid loader test 20 pcs	11069686	

10.2 Folder locations

NOTE

Hidden folders

By default settings the following folder locations are hidden.

- ▶ Start the software *[Windows Explorer]* on the instrument.
- ▶ Navigate to folder options via the following navigation path: View ➔ Folder Options ➔ View
- ▶ Activate the function *[Show hidden files, folders and drives]*.

Explanation	Type	Folder
Method files	.gfm	C:\Users\Public\Documents\Buchi\Pure\methods
Run files	.gkfr	C:\Users\Public\Documents\Buchi\Pure\runs

10.3 Finding out separation conditions with the navigator

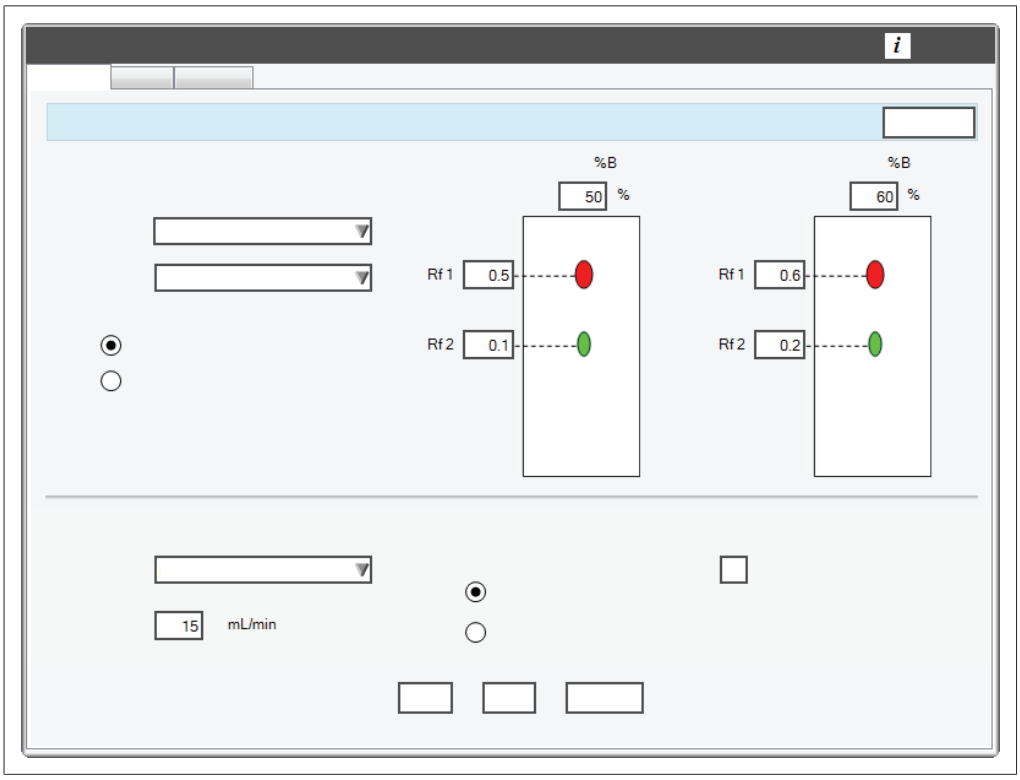
10.3.1 Open the navigator

Navigation path
➔ Gradient panel

- ▶ Navigate to the *Gradient* panel according the navigation path.
- ▶ Tap the button *[Navigator]*.

⇨ The display shows the dialog *Navigator*.

10.3.2 TLC Silica



The TLC-Silica tool uses TLC separation data to provide a recommended gradient for silica separations of 2 or 3 components.
Specification of the samples needed:

- Two different solvent concentrations
- Two separations
- Silica TLC plates

Precondition:

☑ The display shows the dialog *Navigator*. See Chapter 10.3.1 "Open the navigator", page 67

▶ Select the *TLC- Silica* tab.
▶ Select the radio button for two or three components.
▶ Select the weaker solvent at drop-down list A.
▶ Select the stronger solvent at drop-down list B.
▶ Enter the solvent B concentrations used in the TLC separations.
▶ Measure the distance the spot moved on the silica TLC plates.
▶ Divide the measured value by the distance the solvent traveled.
⇨ This is your Rf- value.
▶ Enter the value in the Rf entry field.
▶ Select the column you wish to use from the drop-down list
⇨ The column is selected.
⇨ The display shows the default flow rate.
▶ Adjust the flow rate according to your needs.
▶ Select the radio button for Speed or Purity.
▶ Tap the button *[Calculate]*.
⇨ The display shows the results.

▶ Adjust the following values if necessary:

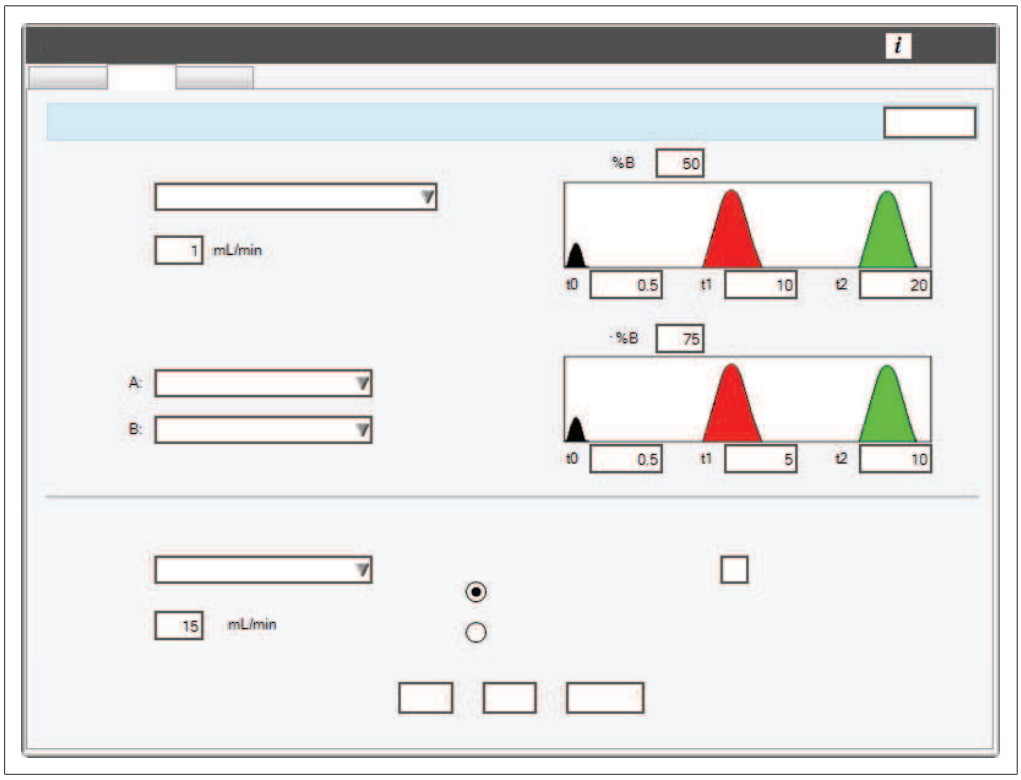
- Column
- Flow rate
- Speed / Purity

▶ Tap the button *[Accept]*.

⇨ The gradient is saved for a run.

⇨ The dialog box closes.

10.3.3 LC-C18



The LC-C18 Tool uses isocratic HPLC separation data to provide a recommended gradient for reversed phase separations of 2 components.
Specification of the samples needed:

- Two isocratic runs on a HPLC column
- Different mobile phase solvent concentrations
- Retention times (t1 and t2) of the components from the chromatograms.

Precondition:

☑ The display shows the dialog *Navigator*. See Chapter 10.3.1 "Open the navigator", page 67

▶ Select the *LC-C18* tab.

▶ Select the HPLC column used from the drop-down list.

▶ Select the weaker solvent at drop-down list A.

▶ Select the stronger solvent at drop-down list B.

▶ Enter the solvent concentrations used in the HPLC separations.

▶ Enter the retention times for each separation under each chromatograph.

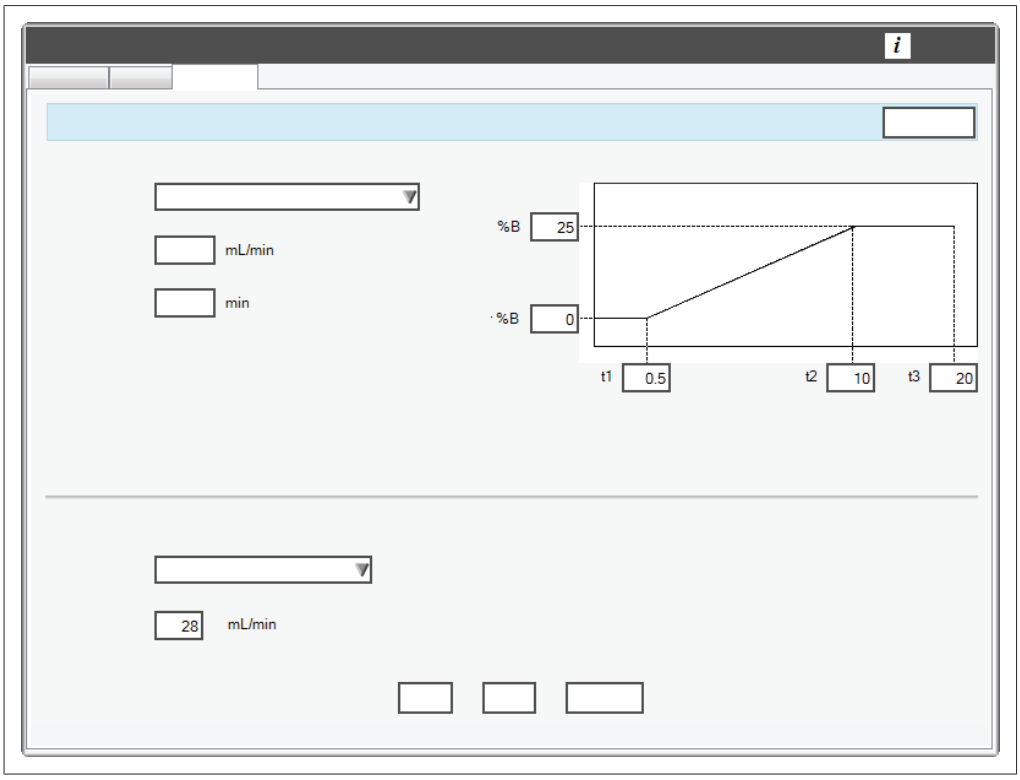
▶ Select the column you wish to use from the drop-down list

⇨ The column is selected.

⇨ The display shows the default flow rate.

▶ Adjust the flow rate according to your needs.
▶ Select the radio button for Speed or Purity.
▶ Tap the button *[Calculate]*.
⇨ The display shows the results.
▶ Tap the button *[Accept]*.
⇨ The gradient is saved for a run.
⇨ The dialog box closes.

10.3.4 LC-Transfer



The LC-Transfer tool converts an HPLC gradient into a Flash Chromatography gradient.
Specification of the sample needed:

- One run on a HPLC column (in gradient elution mode)
- Times %B changes (t1, t2 and t3)

Precondition:

☑ The display shows the dialog *Navigator*. See Chapter 10.3.1 "Open the navigator", page 67

▶ Select the LC-Transfer tab.
▶ Select the HPLC column type used from the drop-down list.
▶ Enter the flow rate used in the HPLC separation.
▶ Enter the following HPLC gradient conditions:

- lower and higher %B
- times t1, t2 and t3

▶ Select the cartridge you wish to use for the Flash separation from the drop-down list.
⇨ The cartridge is selected.
⇨ The display shows the default flow rate.

▶ Adjust the flow rate according to your needs.
▶ Tap the button *[Calculate]*.
⇨ The display shows the results.
▶ Adjust the following values if necessary:

- Flow rate

▶ Tap the button *[Accept]*.
⇨ The gradient is saved for a run.
⇨ The dialog box closes.

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