IC equipment

IC equipment: MiPCT-ME (6.5330.160)

Manual

8.110.8033EN / v2 / 2024-07-02

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Technical Communication
Metrohm AG
CH-9100 Herisau

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This documentation has been prepared with great care. However, errors can never be entirely ruled out. Please send comments regarding possible errors to the address above.

Disclaimer

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1 Introduction

1.1 Description of the IC equipment: MiPCT-ME

The IC equipment: MiPCT-ME expands your ion chromatography system to include the Metrohm intelligent PreConcentration Technique with Matrix Elimination (MiPCT-ME). This makes it possible to determine low concentrations of analytes in a non-ionic sample matrix with high precision.

Inline Preconcentration uses a preconcentration column instead of a sample loop. After the analytes have been preconcentrated, the non-ionic components of the sample can be rinsed off the preconcentration column using ultrapure water. The non-ionic sample components do not interfere with the detection of the analyte. The baseline remains stable.

The high flexibility of the Dosino is essential for the performance of such a system. The combination of Inline Preconcentration and Inline Matrix Elimination allows both big volumes of 20 mL and small volumes from 4 µL to be preconcentrated.

Systems with MiPCT-ME can be calibrated automatically. To do this, all you need is a multi-ion standard. The system injects this multi-ion standard with various injection volumes and thus creates a multi-point calibration. This automatic calibration saves working time and reduces errors.

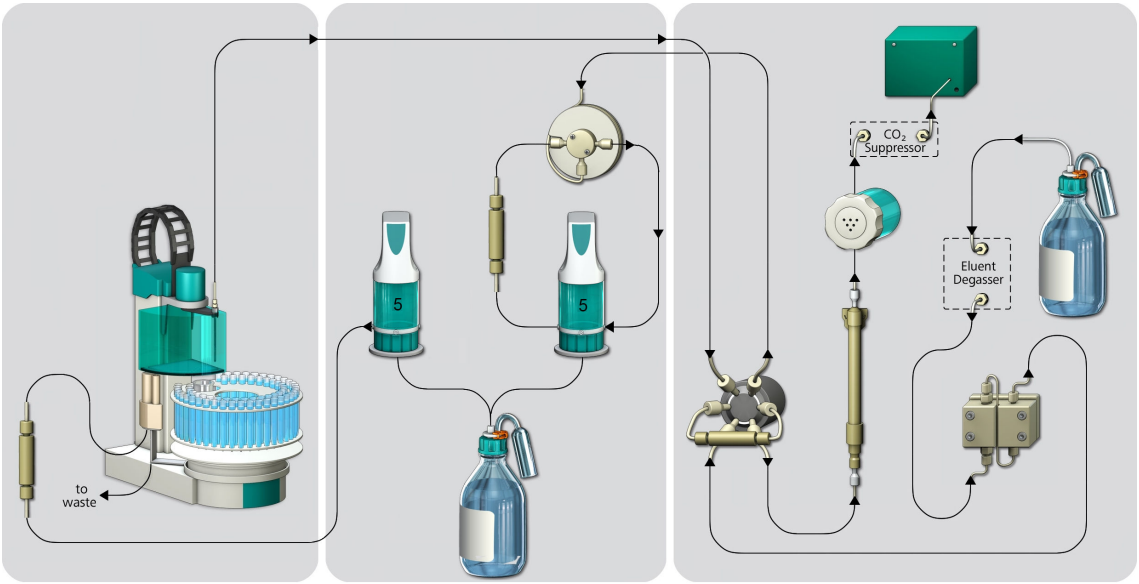


Figure 1 Overview Inline Preconcentration with Matrix Elimination

1.2 About the documentation

This manual describes the installation of the IC equipment: MiPCT-ME.

CAUTION

Please read through this documentation carefully before putting the equipment into operation. The documentation contains information and warnings which the user must follow in order to ensure safe operation of the equipment.

Additional documentation

Topic	Document
Installing the ion chromatograph	Manual for the ion chromatograph
Mounting the Liquid Handling Station on the Sample Processor	Manual for the Liquid Handling Station
Installation of the Dosino	Manual for the Dosino
Care and maintenance of the 807 Dosing Unit	Manual for 807 Dosing Unit

1.2.1 Symbols and conventions

The following symbols and formatting may appear in this documentation:

*(5-**12**)*	**Cross-reference to figure legend** The first number refers to the figure number, the second to the instrument part in the figure.
1	**Instruction step** Perform the steps one after the other.
Method	**Dialog text**, **parameter** in the software
File ▶ New	Menu or menu item
[Continue]	**Button** or **key**
	**WARNING** This symbol draws attention to a possible life-threatening hazard or risk of injury.
	**WARNING** This symbol draws attention to a possible hazard due to electrical current.

	**WARNING** This symbol draws attention to a possible hazard due to heat or hot instrument parts.
	**WARNING** This symbol draws attention to a possible biological hazard.
	**WARNING** Warning of optical radiation
	**CAUTION** This symbol draws attention to possible damage to instruments or instrument parts.
	**NOTICE** This symbol highlights additional information and tips.

2 Overview

2.1 Parts of the IC equipment: MiPCT-ME

Figure 2 IC equipment: MiPCT-ME – Parts

2.2 Parts of the Liquid Handling Station

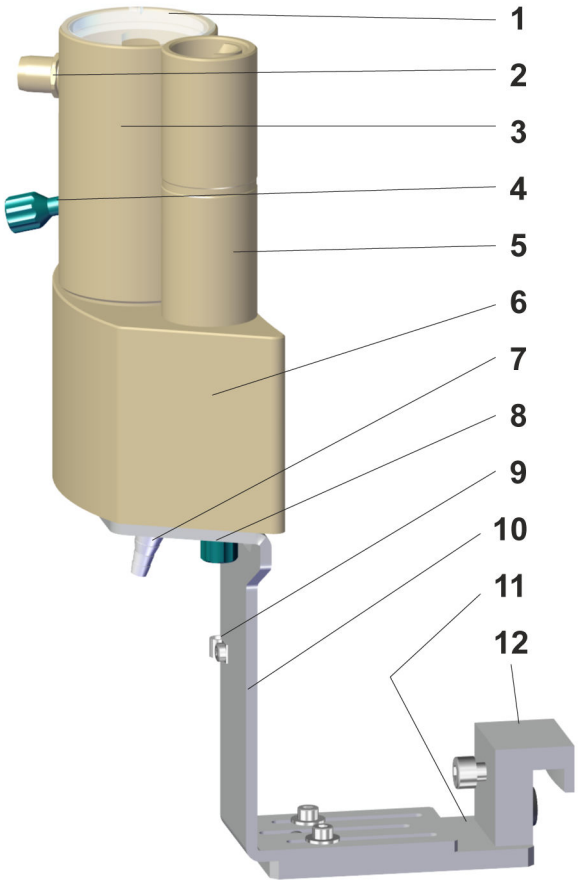


Figure 3 Overview of the device IC equipment (left-handed version)

1	**Lid for the mixing vessel**	**2**	**Overflow** with connector
3	**Mixing vessel**	**4**	**Mixing vessel connector - UNF 10/32** sealed with threaded stopper
5	**Rinsing unit**	**6**	**Main body of the IC equipment** with magnetic stirrer dummy
7	**Waste connector**	**8**	**Rinsing connector - UNF 10/32** sealed with threaded stopper
9	**Cable clip**	**10**	**Support bracket**
11	**Base plate**	**12**	**Clamping fastener**

3 Installation

Proceed as follows to install the IC equipment: MiPCT-ME:

- Install the Liquid Handling Station on the Sample Processor.
- Assemble the Dosino for matrix elimination (Dosino ME) and mount it on the Sample Processor.
- Assemble the Dosino for preconcentration (Dosino PCT) and mount it on the ion chromatograph.
- Mount the bottle cap on the ultrapure water bottle.
- Install the connection between the bottle, the Dosino ME and the Liquid Handling Station.
- Install the connections between the bottle, the Dosino PCT and the transfer capillary.
- Connect the transfer capillary to the injection valve in the ion chromatograph.
- Replace the sample loop in the ion chromatograph with a preconcentration column.

3.1 Installing the Liquid Handling Station

The Liquid Handling Station forms part of the IC equipment: MiPCT-ME.

1 **Installing the Liquid Handling Station**

Install the Liquid Handling Station on the left side of the Sample Processor (*see manual for the Liquid Handling Station*).

3.2 Mounting the Dosinos

CAUTION

Please read through the correct procedure in the Manual for the 800 Dosino before you attach the Dosinos to the 807 Dosing Unit.

Assembling the Dosino ME

Required accessories

- 800 Dosino (2.800.0010)
- 807 Dosing Unit 5 mL without accessories (6.1580.150)

1 Attach the Dosino to the 807 Dosing Unit, (see Manual for the 800 Dosino).

Mounting the Dosino ME to the Sample Processor

Required accessories

- Dosino ME with 807 Dosing Unit
- Dosino holder (6.2057.040)
- Thread adapter (6.1618.020)

1 Fastening the Dosino holder to the Sample Processor

see *manual for the Sample Processor.*

2 Attaching the Dosino to the holder

see *manual for the Sample Processor.*

Assembling the Dosino PCT

Required accessories

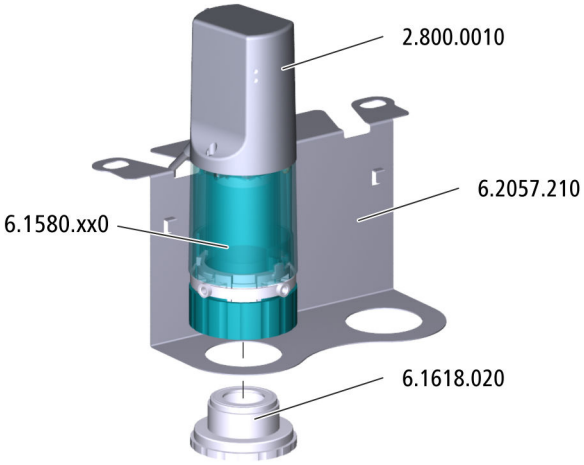
- 800 Dosino (2.800.0010)
- 807 Dosing Unit 5 mL without accessories (6.1580.150)

1 Attach the Dosino to the 807 Dosing Unit, (see Manual for the 800 Dosino).

Mounting the Dosino PCT on the ion chromatograph

Required accessories

- Dosino PCT with 807 Dosing Unit
- Dosino holder (6.2057.210)
- Thread adapter (6.1618.020)



1 Fitting the Dosino holder onto the ion chromatograph

- Loosen the bottle holder on the ion chromatograph.

- Clamp the Dosino holder under it.
- Fasten the bottle holder again.

2 Attaching the Dosino to the holder

- Place the Dosino onto the Dosino holder.
- Fasten the Dosino to the Dosino holder by tightening the thread adapter from below.

3 Connecting the Dosino to the ion chromatograph

CAUTION

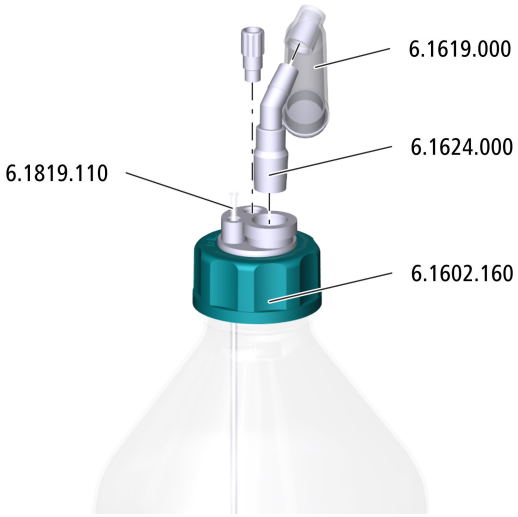
The ion chromatograph must be switched off when you plug the Dosino into the MSB connector.

- Check whether the ion chromatograph is switched on.
  If this is the case, switch off the ion chromatograph.
- Plug the Dosino cable into one of the ion chromatograph's MSB connectors.

3.3 Installing the bottle cap

Required accessories

- Bottle (6.1608.070) filled with ultrapure water
- Eluent bottle cap (6.1602.160)
- Adsorber tube (6.1619.000)
- Adapter for adsorber tube (6.1624.000)
- FEP aspiration tubing (6.1819.110)



1 Mounting the aspiration tubing

- Use the capillary cutter to cut the aspiration tubing to such a length that it touches the bottom of the bottle.
- Place the aspiration tubing in the M6 opening of the bottle cap.

2 Inserting the stopper

- Tighten the M8 stopper to the M8 opening of the bottle cap.

3 Mounting the adsorber tube

- Fill the adsorber tube with some cotton and adsorber material.
- Place the adsorber tube onto the adapter.
- Insert the adapter into the SGJ opening of the bottle cap.

4 Mounting the bottle cap

- Screw the bottle cap onto the regeneration solution bottle.

3.4 Connecting the bottle and the Dosino

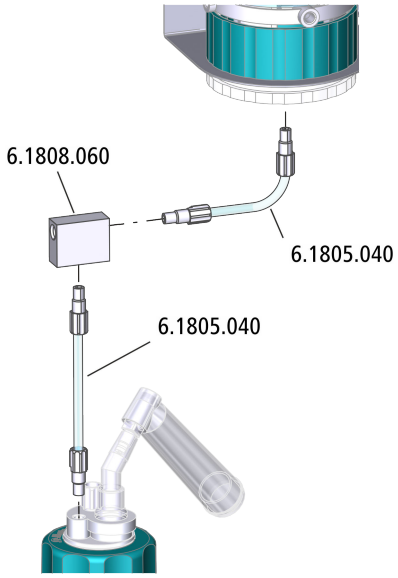
The bottle with rinsing solution (e.g. ultrapure water) is connected to two Dosinos:

- The Dosino ME doses the rinsing solution to the Liquid Handling Station.
- The Dosino PCT doses the rinsing solution to the transfer loop.

Connecting the Dosino PCT to the bottle

Required accessories

- 2 × FEP tubing (6.1805.040)
- T connector (6.1808.060)



1 Connecting the bottle to the T connector

- Tighten one end of the FEP tubing to the M6 opening of the bottle cap.
- Tighten the other end of the FEP tubing to the lower port of the T connector.

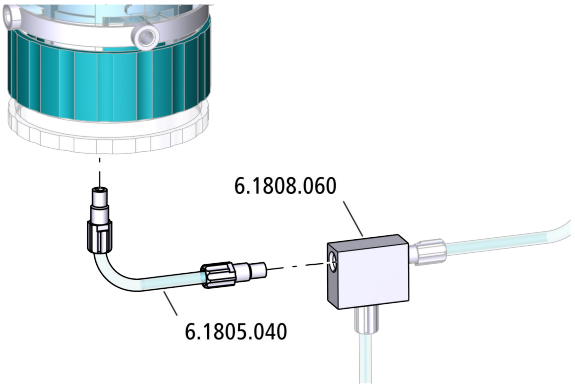
2 Connecting the T connector to the Dosino PCT

- Tighten one end of the FEP tubing to the right port of the T connector.
- Tighten the other end of the FEP tubing to Port 2 of the Dosino PCT.

Connecting the Dosino ME to the bottle

Required accessories

- FEP tubing (6.1805.120)
- T connector (6.1808.060)



1 Connecting the Dosino to the T connector

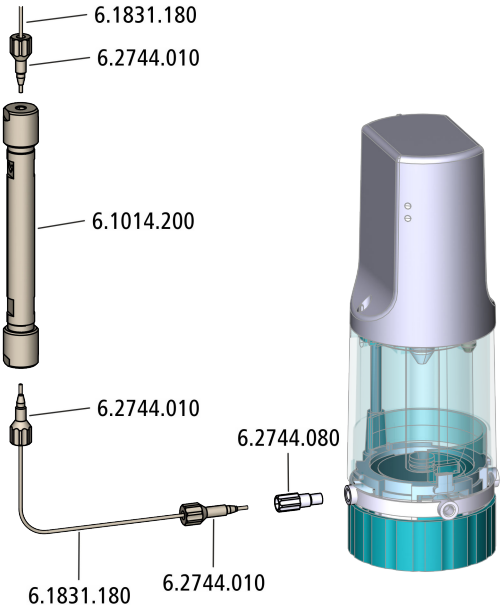
- Tighten one end of the FEP tubing to the left port of the T connector.
- Tighten the other end of the FEP tubing to Port 2 of the Dosino ME.

3.5 Connecting the Dosino ME to the Liquid Handling Station

Establishing connection Dosino Port 1 – trap column – Liquid Handling Station

Required accessories

- Trap column (6.1014.200)
- Liquid Handling Station (6.2841.120)
- PEEK capillary (6.1831.180)
- Pressure screws (6.2744.010)
- Coupling M6 / UNF (6.2744.080)
- Capillary cutter (6.2621.080)



You need two pieces of the PEEK capillary (6.1831.180) for this capillary connection. The length of these capillaries depends on the set-up of your system. One capillary connects the Dosino to the trap column. A second capillary connects the trap column with the Liquid Handling Station.

NOTE

Optimum capillary lengths

The capillaries should be long enough to connect the Dosino and the trap column as well as the trap column and the Liquid Handling Station without strain. However, ensure that the capillaries are not too long in order to avoid dead volume.

1 Mounting the coupling

- Tighten the coupling to Port 1 of the Dosino.

2 Cutting the capillary connection Dosino – trap column to size

- Cut off a piece of the capillary of the required length using the capillary cutter.

3 Attaching the capillary

- Remove the stopper from the trap column's inlet.
- Tighten one end of the capillary to the trap column inlet using a pressure screw.
- Tighten the other end of the capillary to the coupling using a pressure screw.

4 Cutting the capillary connection trap column – Liquid Handling Station to size

- Cut off a piece of the capillary of the required length using the capillary cutter.

5 Attaching the capillary

- Remove the stopper from the trap column's outlet.
- Tighten one end of the capillary to the trap column inlet using a pressure screw.
- Tighten the other end of the capillary to the inlet of the Liquid Handling Station using a pressure screw (*see Manual Liquid Handling Station*).

3.6 Connecting the Dosino PCT to the transfer capillary

Two capillary connections are required between the Dosino PCT and the transfer capillary:

- A connection to Port 1 for precise dosing. The ultrapure water for dosing is cleaned with a Metrosep I Trap 1 - 100/4.0 trap column to ensure excellent water quality.
- A connection to Port 3 for aspirating and filling.

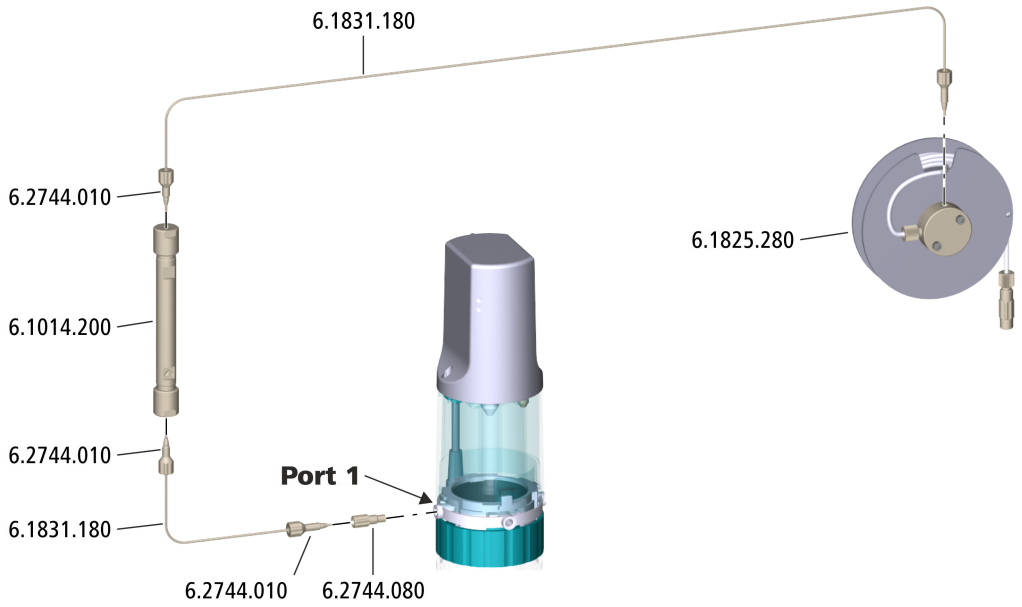
NOTE

Firmly tighten the capillary connections at the Dosino and at the transfer capillary to obtain precise results.

Establishing connection Dosino Port 1 – trap column – transfer capillary

Required accessories

- Trap column (6.1014.200)
- Transfer capillary (6.1825.280)
- PEEK capillary (6.1831.180)
- Pressure screws (6.2744.010)
- Coupling M6 / UNF (6.2744.080)
- Capillary cutter (6.2621.080)



You need two pieces of the PEEK capillary (6.1831.180) for this capillary connection. The length of these capillaries depends on the set-up of your system. One capillary connects the Dosino to the trap column. A second capillary connects the trap column with the transfer capillary

NOTE

Optimum capillary lengths

The capillaries should be long enough to connect the Dosino and the trap column as well as the trap column and the transfer capillary without strain.

1 Mounting the coupling

- Tighten the coupling to Port 1 of the Dosino.

2 Cutting the capillary connection Dosino – trap column to size

- Cut off a piece of the capillary of the required length using the capillary cutter.

3 Attaching the capillary

- Remove the stopper from the trap column's inlet.
- Tighten one end of the capillary to the trap column inlet using a pressure screw.
- Tighten the other end of the capillary to the coupling using a pressure screw.

4 Cutting the capillary connection trap column – transfer capillary to size

- Cut off a piece of the capillary of the required length using the capillary cutter.

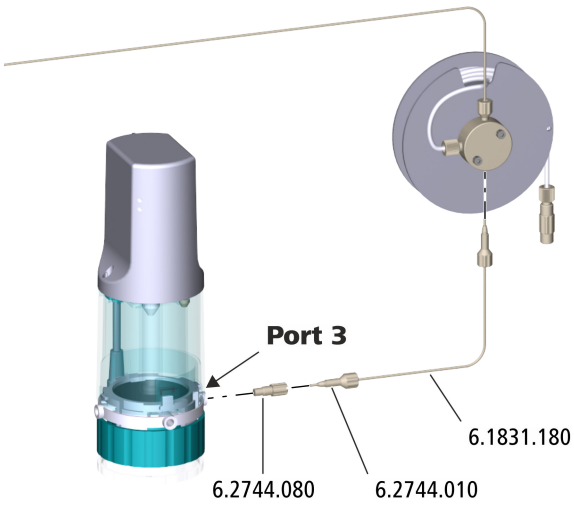
5 Attaching the capillary

- Remove the stopper from the trap column's outlet.
- Tighten one end of the capillary to the trap column inlet using a pressure screw.
- Tighten the other end of the capillary to the T connector of the transfer capillary using a pressure screw.

Establishing connection Dosino Port 3 – transfer capillary

Required accessories

- Transfer capillary (6.1825.280)
- PEEK capillary (6.1831.180)
- Pressure screw (6.2744.010)
- Coupling M6 / UNF (6.2744.080)
- Capillary cutter (6.2621.080)



1 Mounting the coupling

- Tighten the coupling to Port 3 of the Dosino.

2 Cutting the capillary connection Dosino – transfer capillary to size

- Cut off a piece of the capillary of the required length using the capillary cutter. The length of this capillary depends on the set-up of your system.

NOTE

Optimum capillary length

The capillary should be long enough to connect the Dosino and the transfer capillary without strain.

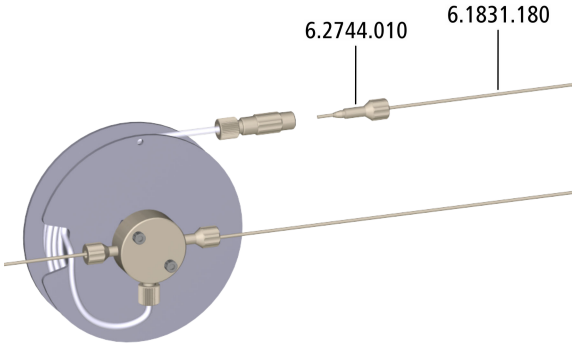
3 Attaching the capillary

- Tighten one end of the capillary to the coupling using a pressure screw.
- Tighten the other end of the capillary to the T connector of the transfer capillary using a pressure screw.

3.7 Connecting the transfer capillary and the injection valve

Required accessories

- Pressure screw (6.2744.070)
- PEEK capillary (6.1831.180)
- Capillary cutter (6.2621.080)



1 Cutting the capillary connection transfer capillary – injection valve to size

- Cut off a piece of the capillary of the required length using the capillary cutter. The length of this capillary depends on the set-up of your system.

NOTE

Optimum capillary length

The capillary should be long enough to connect the transfer capillary and the injection valve without strain.

2 Attaching the capillary

- Tighten one end of the capillary to the coupling of the transfer capillary using a pressure screw.
- Tighten the other end of the capillary to Port 1 of the injection valve using a pressure screw.

3.8 Installing the preconcentration column

Required accessories

- Preconcentration column
- Pressure screws
- PEEK capillary, 0.25 mm ID

NOTE

These accessories are not included in the IC equipment: MiPCT-ME.

1 Removing the sample loop

- Remove the sample loop from Port 3 and Port 6 of the injection valve.

2 Installing the preconcentration column

NOTE

Pay attention to the flow direction!

The arrow on the preconcentration column indicates the flow direction of the eluent. Sample preconcentration is carried out contrary to the flow direction. That means, the arrow on the preconcentration column has to point from left to right.

- Cut off two short pieces of the capillary using the capillary cutter.
- Tighten one capillary to Port 3 of the injection valve using a pressure screw.

- Tighten the other capillary to Port 6 of the injection valve using a pressure screw.
- Install the preconcentration column between the two capillaries using two pressure screws.

4 Operation and maintenance

4.1 807 Dosing Unit 5 mL without accessories (6.1580.150)

Maintenance work on the 807 Dosing Unit must be performed regularly. Information on the care and maintenance of the 807 Dosing Unit can be found in the Manual for the 807 Dosing Unit.

5 Displaying accessories

Up-to-date information on the scope of delivery and on optional accessories can be found on the Metrohm website.

1 Searching for a product on the website

- Go to *https://www.metrohm.com*.
- Click on 🔍.
- Enter the article number of the product (e.g. **2.1001.0010**) into the search field and press **[Enter]**.

The search result is displayed.

2 Displaying product information

- To display the products matching the search term, click on **Product models**.
- Click on the desired product.

Detailed information regarding the product is displayed.

3 Displaying accessories and downloading the accessories list

- To display the accessories, scroll down to **Accessories and more**.
  - The **scope of delivery** is displayed.
  - Click on **[Optional parts]** for the optional accessories.
- To download the accessories list, click on **[Download accessories PDF]** under **Accessories and more**.

NOTE

Metrohm recommends keeping the accessories list for reference purposes.

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