IC Equipment

IC Equipment: MiPCT (6.5330.140)

Manual

8.110.8031EN / v2 / 2024-07-02

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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

The IC Equipment: MiPCT expands your ion chromatography system to include the Metrohm intelligent PreConcentration Technique (MiPCT). Samples at ng/L level can be analyzed with MiPCT.

Inline Preconcentration uses a preconcentration column instead of a sample loop. When a precise sample volume flows through the preconcentration column, then the preconcentration column retains the respective ions. With the injection, the bound ions flow with the eluent onto the separation column.

The high flexibility of the 800 Dosino is essential for the performance of such a system. Inline Preconcentration allows both big volumes (of 10 mL) and small volumes from 4 µL to be preconcentrated.

Systems with Inline Preconcentration 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.

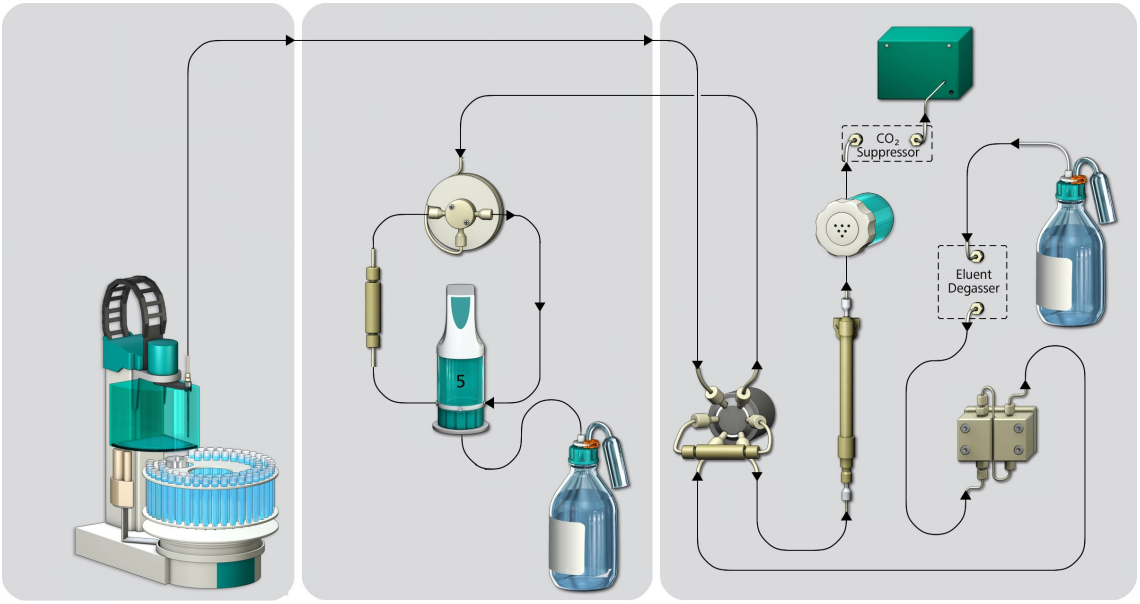


Figure 1 Overview Inline Preconcentration

1.2 About the documentation

This manual describes the installation of the IC Equipment: MiPCT.

CAUTION

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

Additional documentation

Topic	Document
Mounting the Liquid Handling Station on the Sample Processor	Manual for the Liquid Handling Station
Installation of the Dosino	Manual for the 800 Dosino
Care and maintenance of the 807 Dosing Unit	Manual for the 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

Figure 2 IC Equipment: MiPCT – Parts

2.2 Parts of the Liquid Handling Station

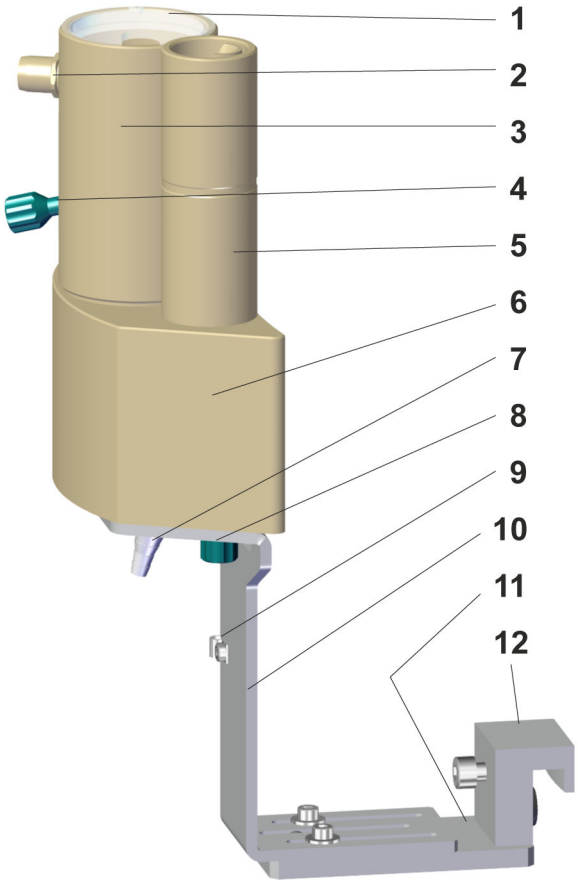


Figure 3 Overview of the device IC Equipment (left-handed version)

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:

- Install the Liquid Handling Station on the Sample Processor.
- Assemble the 800 Dosino and mount it on the ion chromatograph.
- Attach the bottle cap to the ultrapure water bottle.
- Connect the Dosino to the bottle.
- Connect the Dosino to the transfer tubing.
- Connect the Dosino to the trap column and the transfer tubing.
- Connect the transfer tubing 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.

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 Dosino

Attaching the Dosino to the 807 Dosing Unit

Required accessories

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

CAUTION

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

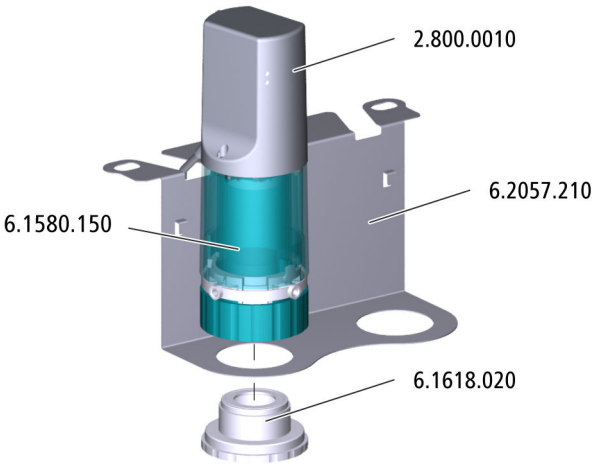
1 Attach the Dosino to the 807 Dosing Unit, (see Manual for the 800 Dosino).

Fastening the Dosino to the ion chromatograph

Required accessories

- 800 Dosino (2.800.010) with 807 Dosing Unit 5 mL without accessories (6.1580.150)

- 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

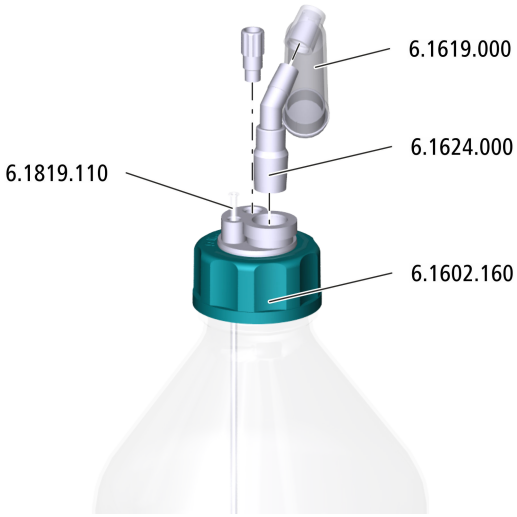
The ion chromatograph must be switched off when you plug the Dosino into the MSB connector.

- 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.

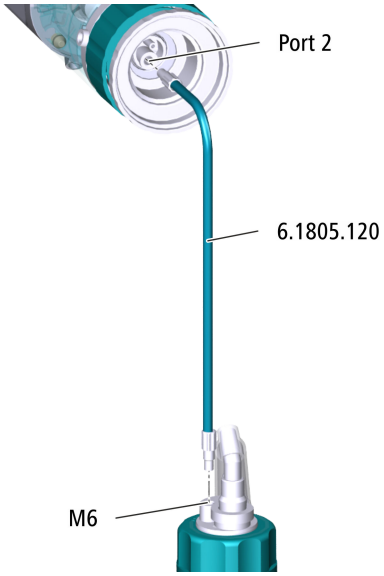
4 Mounting the bottle cap

- Screw the bottle cap onto the regeneration solution bottle.

3.4 Connecting the bottle and the Dosino

Required accessories

- FEP tubing (6.1805.120)



1

- Tighten one end of the FEP tubing to the M6 opening of the bottle cap.
- Tighten the other end of the FEP tubing in port 2 of the Dosino.

3.5 Connecting the Dosino to the transfer tubing

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

- 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

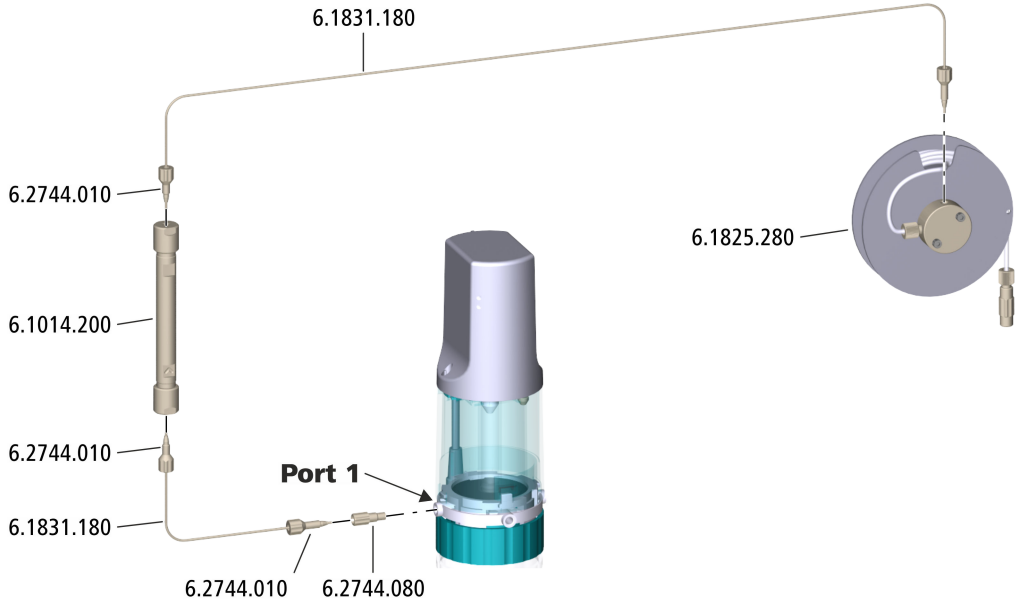
Firmly tighten the capillary connections at the Dosino and at the transfer tubing to obtain precise results.

Establishing connection Dosino Port 1 – trap column – transfer tubing

Required accessories

- Trap column (6.1014.200)

- Transfer tubing (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. The other capillary connects the trap column to the transfer tubing.

NOTE

Optimum capillaries

Only use PEEK capillaries with an inner diameter of 0.5 mm.

Optimum capillary length

The capillary should be long enough to connect the transfer tubing and the injection valve without strain. However, ensure that the capillary is 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.
  Also see: *Cutting capillaries* video on the Internet *http://ic-help.metrohm.com/maintenance.php?chapter=1_1*.

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 tubing to size

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

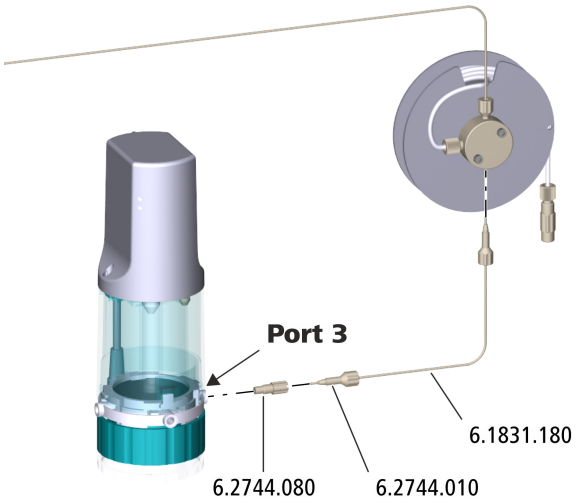
5 Attaching the capillary

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

Establishing connection Dosino Port 3 – transfer tubing

Required accessories

- Transfer tubing (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 tubing 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 capillaries

Only use PEEK capillaries with an inner diameter of 0.5 mm.

Optimum capillary length

The capillary should be long enough to connect the transfer tubing and the injection valve without strain. However, ensure that the capillary is not too long in order to avoid dead volume.

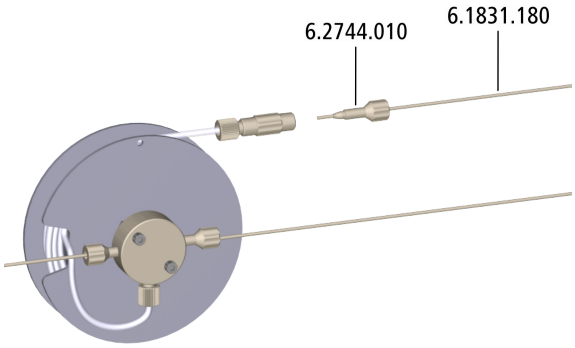
3 Attaching the capillary

- 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 tubing using the pressure screw.

3.6 Connecting the transfer tubing 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 tubing – 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 capillaries

Only use PEEK capillaries with an inner diameter of 0.5 mm.

Optimum capillary length

The capillary should be long enough to connect the transfer tubing and the injection valve without strain. However, ensure that the capillary is not too long in order to avoid dead volume.

2 Attaching the capillary

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

3.7 Installing the preconcentration column

Required accessories

- Preconcentration column
- Pressure screws
- PEEK capillary (6.1831.180)

NOTE

These accessories are not included in the IC Equipment: MiPCT.

1 Removing the sample loop

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

2 Installing the preconcentration column

- 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.
  Pay attention to the flow direction of the eluent indicated on the preconcentration column.

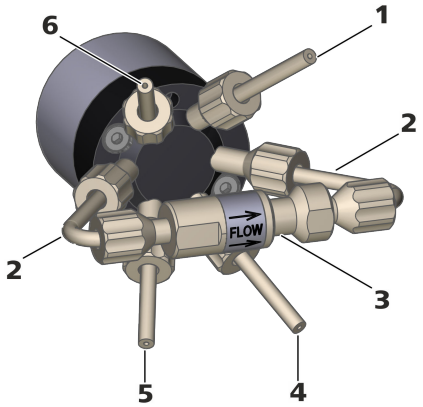


Figure 4 Correctly installed preconcentration column

1	**Sample inlet capillary**	**2**	**PEEK capillary** Inner diameter 0.5 mm (6.1831.180)
3	**Preconcentration column**	**4**	**Eluent outlet capillary**
5	**Eluent inlet capillary**	**6**	**Sample outlet capillary**

4 Operation and maintenance

4.1 807 Dosing Unit 5 mL without accessories (6.1580.150)

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

4.2 Trap column (6.1014.200)

Information on the care and maintenance of the trap column can be found in the leaflet for the trap column.

4.3 Preconcentration column

Information on the care and maintenance of the preconcentration column can be found in the leaflet for the preconcentration column.

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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