

CMA 270 Refrigerated Fraction Collector Installation and Operation Manual



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1. Introduction

Thank you for purchasing the CMA 270 Refrigerated Fraction Collector.

The CMA 270 Refrigerated Fraction Collector is specially designed to collect microliter volume fractions typical of microdialysis. It has thermoelectric cooling down to +5 °C and the fractions can be collected in sealed vials. Both are important considerations for the prevention of evaporation and chemical degradation. The capacity of the collector is 40 vials of 300 µL each. Collection of 40 samples (single cannula) or alternatively 2 x 20 samples (dual cannula). Collection time can be set to 1-99 minutes.

The CMA 270 Refrigerated Fraction Collector is designed for ease of use.

- Cooling of the samples collected down to +5 degree Celsius
- Collection of 40 samples or alternatively 2 x 20 samples
- Use of well-known CMA 300 µl vials
- Designed for use with re-sealing caps on the vials which eliminates evaporation
- Connects to probe by Tubing Adapters and FEP tubing
- Small footprint occupies little space
- Low noise level for minimal disturbance
- Simple and straight forward handling

On the following pages you will find information which is necessary for safe operation. Please review the following instructions, including warnings and safety instructions, for your personal safety.

2. Safety

CMA 270 Refrigerated Fraction Collector is designed for laboratory use only, e.g. animal experiments, analytical chemistry, etc, and is therefore not equipped with the special safety functions that are necessary for use in studies involving humans. In view of this, the following considerations should always apply:

The CMA 270 Refrigerated Fraction Collector should only be used for its intended purpose, namely as a fraction collector for small volumes in laboratory studies.

The CMA 270 Refrigerated Fraction Collector should always be used in accordance with the instructions in the user's Manual.

The CMA 270 Refrigerated Fraction Collector should be used by trained personnel who understand its proper use.

If the CMA 270 Refrigerated Fraction Collector is sold or transferred, the new owner or user should be scientifically responsible and have the capacity and expertise to use the fraction collector properly and solely for its intended purpose.

It is in the interests of your organization and of every person who is responsible for the custody, operation, and maintenance of the CMA 270 Refrigerated Fraction Collector that the foregoing guidelines are always complied with. In the event of an accident, failure to comply could result in legal liability.

2.1 Safety instruction

Caution: If the fraction collector becomes wet either from a leaking tube or liquid being sprayed on it - turn the fraction collector off before proceeding to handle the unit.

Caution: Keep your fingers away from the rotating parts of the fraction collector, while in operation, to avoid squeezing them. Also watch loose parts, like long hair, clothes, jewelry etc.

a. The fraction collector should be protected against direct or indirect contact with liquids. Short circuit or other hazardous situations may occur if liquids are allowed to get inside.

b. Use the fraction collector within the following environmental conditions:

- Indoor use

- Temperatures 10° to 25° Celsius (50° to 77° Fahrenheit)

- Maximum relative humidity 80% for temperatures up to 25° Celsius (77° Fahrenheit)

We recommend the use of **CMA's** sampling vials and caps for collecting samples. It is also recommended that the collection needle is replaced at regular intervals. This is most critical when the fraction collector is used with the CMA7431102 Caps, Plastic re-sealing

Caution: Make sure to use proper fittings, such as the CMA3409500 Tubing Adapters, for connecting the probe outlet to the fraction collector needle.

3. Unpacking

The CMA 270 Refrigerated Fraction Collector is delivered in a specially designed box to protect the instrument from damage during transportation. The reusable carton provides excellent protection should it be necessary to transport the instrument or store it for a long period of time.

3.1 Packing list

1. CMA 270 Refrigerated Fraction Collector, 1 pc
2. Power supply with 12V adapter, 1 pc.
3. Hexagon key
4. User's Guide, 1 pc
5. CMA7431100 Vials, Plastic (Polypropylene), 1 pkg = 1000 pcs
6. CMA7431102 Caps Plastic re-sealing (Santropene), 1 pkg = 1000 pcs
7. CMA8011272 Fraction Collector needle, 2 pieces

Before installation, read all safety instructions and warnings. Also please ensure that the following items are included. We recommend that you test all the functions before you start to use the fraction collector in your application. Please test that the movement of the carousel works properly, and the timer can be set to desired values.

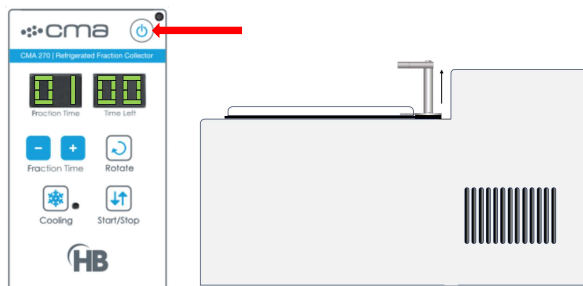
4. Position of the unit

The CMA 270 Refrigerated Fraction Collector can stand directly on a laboratory workbench or any other flat stable, vibration-free surface adjacent to a grounded wall socket (110-240VAC)

5. Installation

To power up the fraction collector, plug the power cord into a power outlet. Press the **on/off** button next to the red light.

The “Fraction time” display will read 01 and the “Time left” display 00 while the sampling needle tower will go to its upper end position.

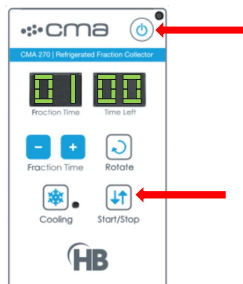


Dual Cannula operation mode:

1. Turn off the fraction collector



2. Press and hold down “**Start/Stop**” and press and hold down the “**on/off**” button for 3 sec.



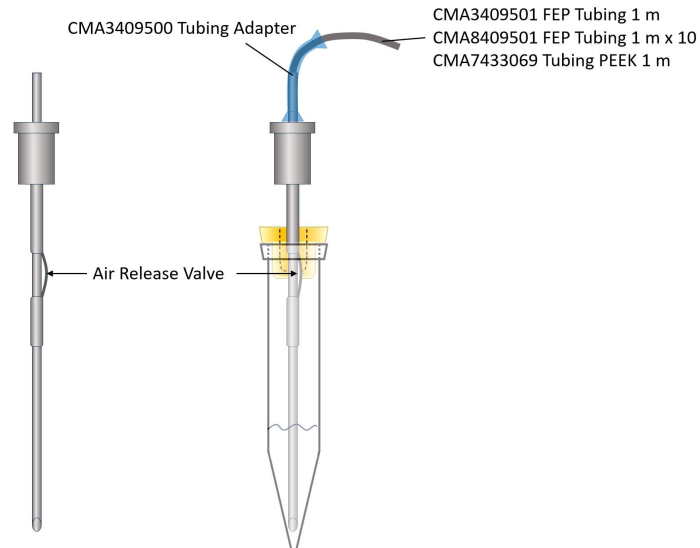
The display will start to flash every third second indicating dual cannula mode of operation.

5.1 Collection cannulas

There are several different types of collection cannulas. 2 pcs Fraction Collection Needle are included.

5.2 Fraction Collection Needle.

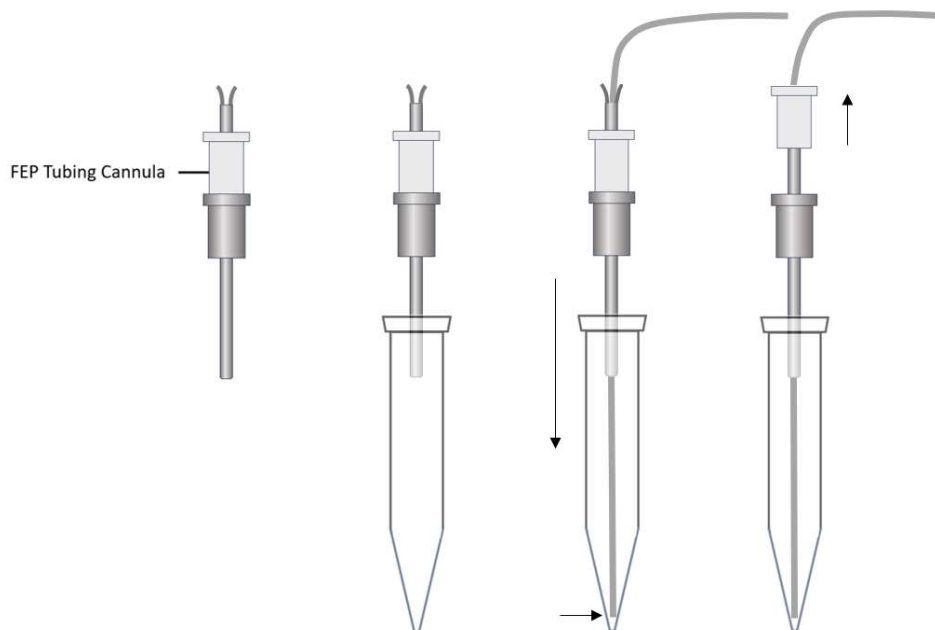
The Fraction Collection Needle is made of stainless steel and is intended to be used when collecting samples under re-sealing caps. The steel is treated to prevent oxidation of labile compounds in the perfusate. The Fraction Collection Needle is equipped with an air release valve makes it possible to collect the dialysate into capped vials using re/sealing caps.



5.3 FEP Tubing Cannula (optional).

Use this cannula when you want to collect fluid directly from the probe outlet tubing.

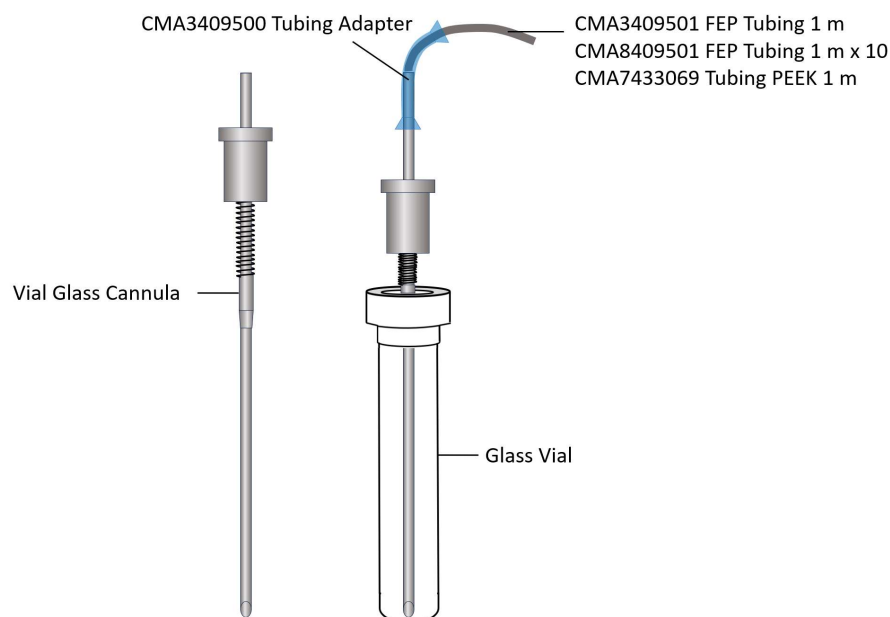
Place two empty vials in the two slots under the cannula holder. The tubing from the probe is fed through the cannula until it touches the bottom of the collecting vial. Secure the tubing in place by lifting the plastic knob. Make sure the FEP tubing is not too long. If the FEP is pulled down to a greater length than the vial depth the FEP tubing will get stuck between vials and cannula holder when moving between vials for collecting new samples. Please note it is not possible to use a cap or septa when the Tubing Cannula is used.



5.4 Vial Glass Cannula (optional).

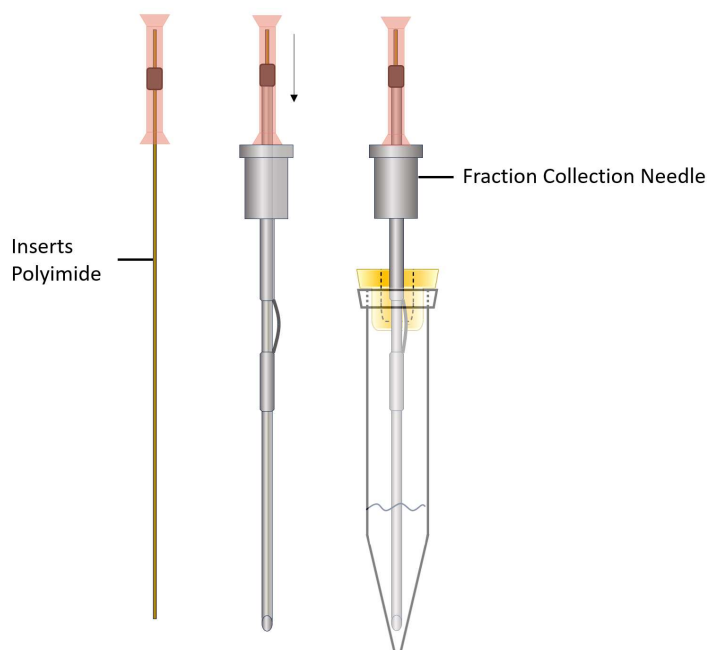
Use this cannula when you want to collect the fluid into glass vials with or without caps.

The Vial Glass Cannula has a spring which protects the needle from getting damaged when using it for Glass Vials. Glass Vials from Thermo Fisher directly 6PCV8-03R1G and CAPS/SEALS SIL. PTFE 6PCC8ST101 or similar can be used.



5.5 Inserts Polyimide (optional).

Inserts Polyimide is used in combination with the Fraction Collection Needle. It is designed to go inside the cannula and secured with the attached tubing adapter. FEP or PEEK tubing is connected to the other end of the insert avoiding extra dead volume to be added. The Inserts is manufactured so it is not damaged when the re-sealing cap is penetrated.



If a risk of carry-over effects between experiments is suspected, the insert can be easily disposed of. The Insert lower the internal dead volume. Checking the actual dead volume see description below. There is a risk of

capillary movement in the small, but still existing, space between the inner tube outer wall and the inner wall of the steel cannula. Please note, if the Insert is used due to the contamination risk from the steel, be aware that the outer wall of the steel cannula is immersed in the sample throughout the collection interval. The steel parts of the cannula are all carefully passivated minimizing any risk of ion release as this is a known factor for degradation of certain compounds in the microdialysis sample.

5.6 Measure the cannula/inserts internal dead volume

The internal volumes can be exactly measured as follows:

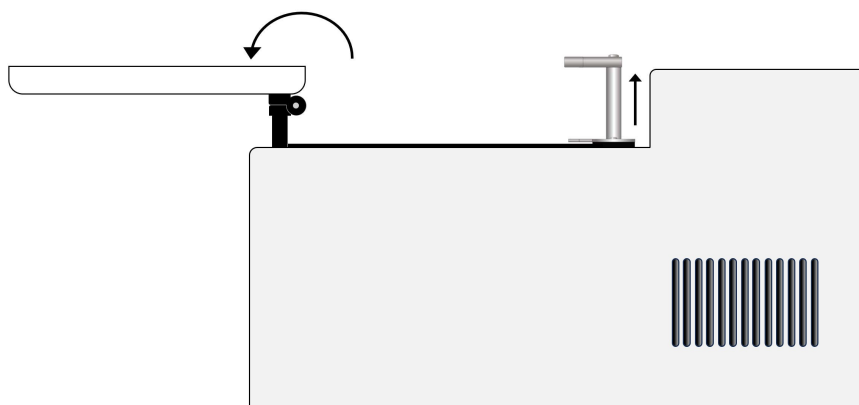
- Fit a small microsyringe (25–50 μ l) with 22-23 Ga blunt needle, filled with deionized water in the CMA 4004 Syringe Pump.
- Connect the cannula to the microsyringe using FEP-tubing and Tubing Adapters.
- Run the pump at a low flow rate while observing the water inside the tubing with a stereo microscope. When the water just reaches the inlet side of the cannula/inserts, stop the pump.
- Reset the delivered volume on the pump display and restart the pump. Water will now enter the channel.
- Using a stereo microscope, observe the outlet of the channel and as soon as water comes out, stop the pump.
- Read the delivered volume on the pump display.
- Repeat at least three times and calculate the mean internal volume of the cannula/insert

6. Install the cannula

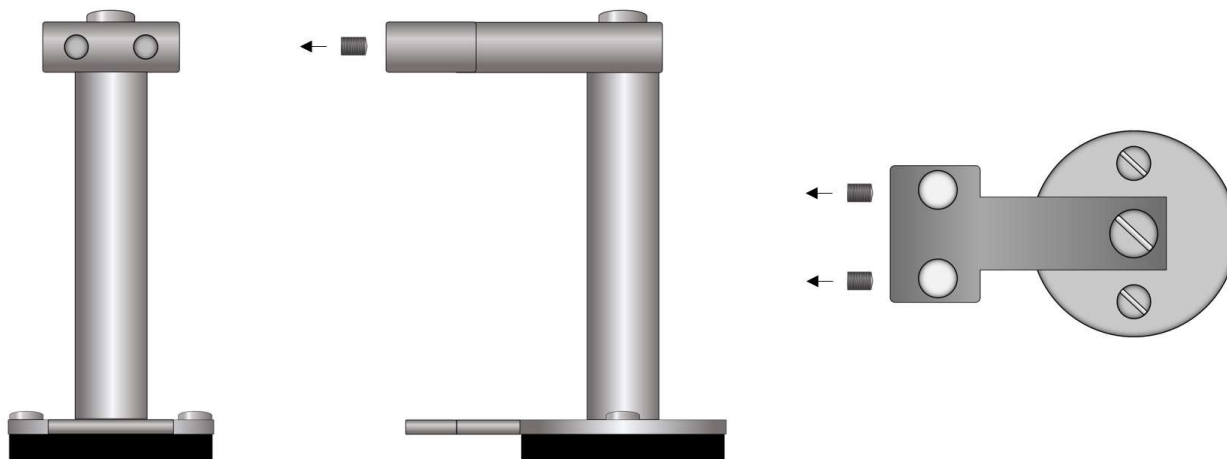


Start/Stop

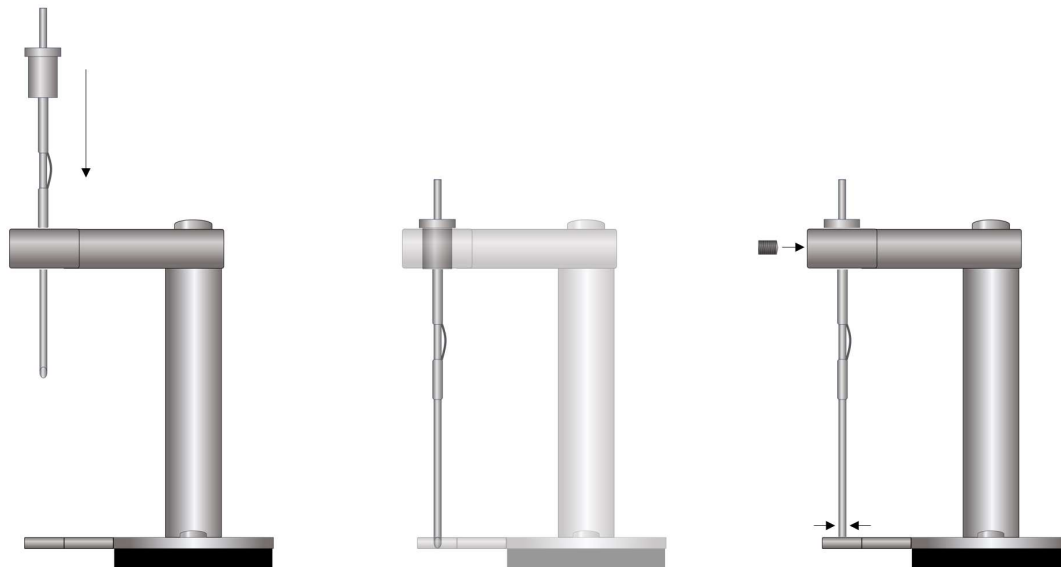
Press Start/Stop to move the cannula tower up and open the lid.



Unscrew the small screw in the front of the tower arm, using the included hexagon key.



Take the cannula out of the protective case and bring the needle down through the hole in the tower arm. Secure the needle to the arm with the screw. Make sure that the cannula is centered in the lower hole by adjusting it using fingers when tightening the screw.



Secure the cannula to the tower arm with the screw. Make sure that the cannula is centered in the lower hole by adjusting it using fingers when tightening the screw.

7.1 Set fraction time



Pressing the **Fraction Time** buttons (-) / (+) will either increase the collection time or decrease it. The maximum collection time is 99 minutes and the shortest is 1 minute. A fraction time set to zero minutes means controlling the change to the next vial manually.

7.2 Move the cannula to next vial position

Before moving the cannula: **Note that the cannula tower must be in its highest position during this action.**



Press **Start/Stop** to move the cannula tower up.



Press **Rotate** to move the cannula one step forward to the next collecting position.



Press and hold **Rotate** to keep the movement going until the button is released.

7.3 Start



Press **Start/Stop** to begin the operation. A dot starts blinking in the lower right corner of the **Time left** display that indicates sampling going on. When reaching the set number of minutes in the **Time left** display the cannula will automatically move to the next position.

7.4 Change fraction time interval



Fraction Time Change Fraction Time while running an experiment. The new time interval will take place in the next vial position.

7.5 Stop



Start/Stop To stop the fraction sampling press, Start/Stop. Cannula tower moves up.

7.6 Cooling



Cooling The cooling is turned on/off by pressing the cooling button.

8. Errors

In case the needle tower is blocked during its downward movement, the needle tower will stop the movement and the two displays will show --0 and 0--. If this happens unplug the power cord and plug it back again. This re-sets the instrument.

In case the vial holder carousel is stopped in between two vials the two displays will show 0-- and --0. If this happens unplug the power cord and plug it back again. This re-sets the instrument.

9. Maintenance

The CMA 270 itself does not need any regular service or lubrication.

We recommend changing the Fraction Collection Needle regularly. When used for penetrating the re-sealing Santoprene caps, then the cannula tip wears and eventually becomes blunt and more force is required to penetrate the caps. Keep the unit clean and free from liquids and soils which could potentially harm the electronics and mechanics.

10. Warranty

CMA Microdialysis AB guarantees all components of the CMA 270 Refrigerated Fraction Collector to be free from defects of material and workmanship for a period of one year after initial purchase.

For warranty service or repair, all CMA products must be returned to CMA or to an authorized representative. The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by the Owner, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance. For any product expressly covered under this warranty, CMA is liable only for the extent of replacement of the defective items. CMA shall not be liable for any personal injury, property damage, or consequential damages of any kind whatsoever. The foregoing warranty is in lieu of all other warranties of merchantability and fitness for a particular purpose.

11. Service

If service or repair is required, please contact CMA or your local distributor.

Europe:

E-mail: cma@microdialysis.se

Phone: +46 8 470 1000

Web: www.microdialysis.se

US:

E-mail: support@hbiosci.com

Phone: 800-547-6766

Web: www.harvardapparatus.com

World:

Please contact your local supplier.

12. Technical data

Number of Vials	40 x 300 µl
Number of sampling lines	1 or 2
Vials	Plastic or Glass
Caps	Plastic Vials: Re-Sealing (CMA7431102) Glass Vials: Caps/Seals Silicone/PTFE
Cooling	Down to +5° C
Cooling Capacity	-15° C from environmental temperature or better
Collection mode	1-99 minutes
Voltage	100 – 240VAC, 50-60 Hz, output 12 VDC (adapter included)
Dimensions	270 x 170 x 150 (111) mm (W x D x H)
Weight	~2.4 kg
External connections	N/A
PC connection	N/A

13. Ordering information

Name	Ref. No.
CMA 270 Refrigerated Fraction Collector	CMA 8011270
Fraction Collection Needle	CMA 8011272
FEP Tubing Cannula	CMA 8011273
Vial Glass Cannula	CMA 8011274
Insert Polyimide for Fraction Collection Needle	CMA 8011275
Tubing Adapters 10 pcs	CMA 3409500
FEP Tubing 1 meter	CMA 3409501
FEP Tubing 1 meter x 10	CMA 8409501
Vials, Plastic 300 µl, 1000/pkg	CMA 7431100
Caps, Plastic re-sealing 1000/pkg	CMA 7431102