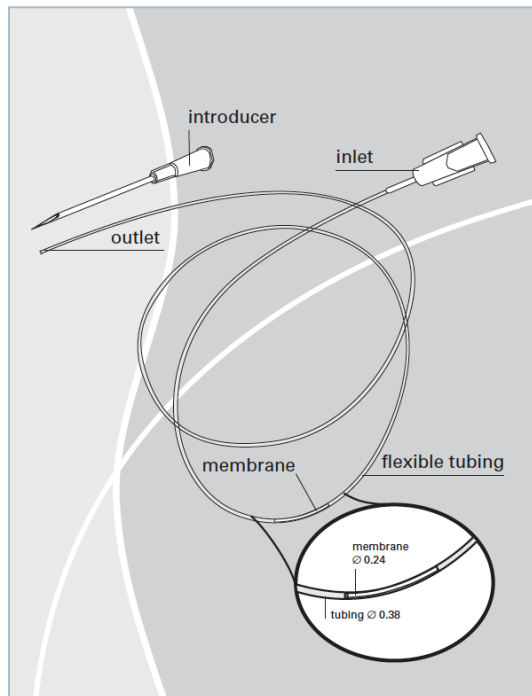


## CMA 30 Linear Microdialysis Probe User's Manual



### TECHNICAL INFORMATION

#### Membrane

Material	Cuprophane
Molecular Cut-Off	6,000 Daltons
Outer Diameter	0.24 mm
Length	10 mm

#### Tubing

Material	Polyimide
Length Inlet Tubing	250 mm
Length Outlet Tubing	250 mm
Total Length (tubing + membrane)	500 mm
Outer Diameter	0.38 mm
Double Tubing Material	Polyurethane
Double Tubing Length	12 mm
Double Tubing Outer Diameter	0.63 mm

The probe can be sterilized in its inner package with ethylene oxide.

### Cutaneous Implantation, Anesthetized Animal

1.	Anesthetize the rat. Be sure to keep the animal's body temperature normal during the surgical procedure and the study period, by using a homeothermic blanket.
2.	Place the anesthetized animal on its ventral surface.
3.	Shave the hair from the animal and clean the skin.
4.	Mark the skin with a felt tip marker where the introducer needle should go in and exit, leaving at least an 18 mm window for drug transport studies. Tunnel the introducing needle at the appropriate depth required for the experiment.
5.	Remove the protective tubing from the probe. Slide the probe outlet tubing through the needle end of the introducer carefully so the membrane sits in the middle of the introducer. Make sure not to bend the tubing at the membrane.
6.	Hold the probe in place against the skin while carefully withdrawing the introducer needle.
7.	Secure the probe position with surgical tape or surgical glue.
8.	Load the CMA pump with a Perfusion Fluid-filled syringe (either a Luer lock single use syringe or a glass syringe with fixed needle). Make sure there are no air bubbles.
9.	Connect the inlet Luer lock connector to the single use syringe or cut off the Luer lock connector from the probe inlet with a sharp cut, and connect it to the glass syringe needle via a <b>blue</b> Tubing Adapter. <b>To facilitate the handling of Tubing Adaptors, they should be pre-soaked in ethanol for a minimum of 10 minutes.</b>
10.	Start the pump at 8-10 $\mu\text{L}/\text{min}$ . Confirm that liquid is flowing from the outlet of the probe. Maintain this flushing rate for approximately 5 min to remove air bubbles. Reduce the flow rate to operational rates, usually 1-5 $\mu\text{L}/\text{min}$ .
11.	If desired, extend the outlet tubing by the use of a Linear Tubing Adapter and FEP tubing for connection to a CMA 470 Refrigerated Fraction Collector or to a CMA 142 Fraction Collector. To reduce the outlet tubing length cut it with a sharp scalpel as it sits on a hard surface.
12.	Wait at least 1 hour for stabilization before beginning to sample.

## Liver Implantation, Awake Animal

1.	Anesthetize the rat. Be sure to keep the animal's body temperature normal during the surgical procedure and the waking period, by using a homeothermic blanket.
2.	Place the anesthetized animal on its back with the tail towards you.
3.	Make an incision, approximately 3 cm in length, in the skin along the abdominal midline. Carefully make a second incision through the muscle wall to expose the liver.
4.	Tunnel the introducing needle through one lobe of the liver, at a minimum length of 14 mm. Make sure not to squeeze the tissue.
5.	Remove the protective tubing from the probe. Slide the probe outlet tubing through the needle end of the introducer carefully so the membrane sits in the middle of the introducer. Make sure not to bend the tubing at the membrane.
6.	Hold the probe in place while carefully withdrawing the introducer needle.
7.	Secure the probe position with a drop of glue on the tubing at the inlet and outlet sides of the implanted probe. Small glass beads can be used as stoppers. Remember to add one before the implantation for the inlet side. Glue them to the tubing just where the tubing goes into and comes out from the tissue. If using sutures be sure not to tie them too tightly around the tubing.
8.	Cut off the Luer lock connector at the double tubing with a scalpel.
9.	Tunnel the inlet and the outlet tubing under the animal's skin to a point at the skull, nape of the neck or midline of the back. To do so, first make an incision through the skin at the desired exit point. Then insert a cannula of appropriate length and diameter (or hemostatic forceps) through the incision. Push the cannula under the skin to the inlet side of the CMA 30 Linear Probe implant site. Insert the end of the inlet tubing (double tube end) and gently push it through the cannula. Removing the cannula from the direction it was inserted will exteriorize the probe tubing at the desired site.
10.	Repeat the tunneling procedure (see step 9) to the opposite side, from the same incision at the neck, for the outlet tubing.
11.	Secure the exteriorized probe tubings and close both incisions. Make sure the tubings are not too tight such that the animal is not able to move without harming the tissue or destroying the probe. It is advisable to use some type of secured cover or harness to prevent the animal from damaging the exteriorized tubing.
12.	If tubing extensions are needed attach pieces of FEP Tubing via a Tubing Adapter.
13.	Connect the inlet tubing (double tube end) directly to the CMA 4004 or the CMA 402 Syringe Pump or via the swivel. Start the pump on 8 $\mu$ L/min. Observe the outlet tubing to make sure that liquid is flowing. Proceed flushing for approximately 5 min to remove air bubbles.
14.	Before connecting the outlet tubing, reduce the flow rate to that desired, usually 1-5 $\mu$ L/min.
15.	For further set up instructions, see CMA 120 System for Freely Moving Animals, User's Manual.

ORDER INFORMATION	Ref No.	ORDER INFORMATION	Ref No.
CMA 30 Linear Microdialysis Probe, 4/pkg	CMA 8010460	FEP Tubing 1 m, 10/pkg	CMA 8409501
Tubing Adapter for Linear Probe, 10/pkg	CMA 8010464	Perfusion Fluid T1	CMA P000034
Tubing Adapter, 10/pkg	CMA 3409500	Microsyringe 1 mL	CMA 8309020
FEP Tubing 1 m, 1/pkg	CMA 3409501	Microsyringe 2.5 mL	CMA 8309021

## WARRANTY

The probes manufactured by CMA Microdialysis are warranted to be free from defects in material and workmanship for a period of one year from the manufacturing date if stored in the original package. Claims should be forwarded without delay to CMA Microdialysis or to your local distributor.

*The CMA 30 Linear Microdialysis Probe is not intended for use in humans. It is only suitable for laboratory research in animals. CMA Microdialysis only guarantees single usage of CMA 30 Linear Microdialysis Probes.*



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