



CMA 11 & CMA 12 Probe and Guide Instruction

Instructions



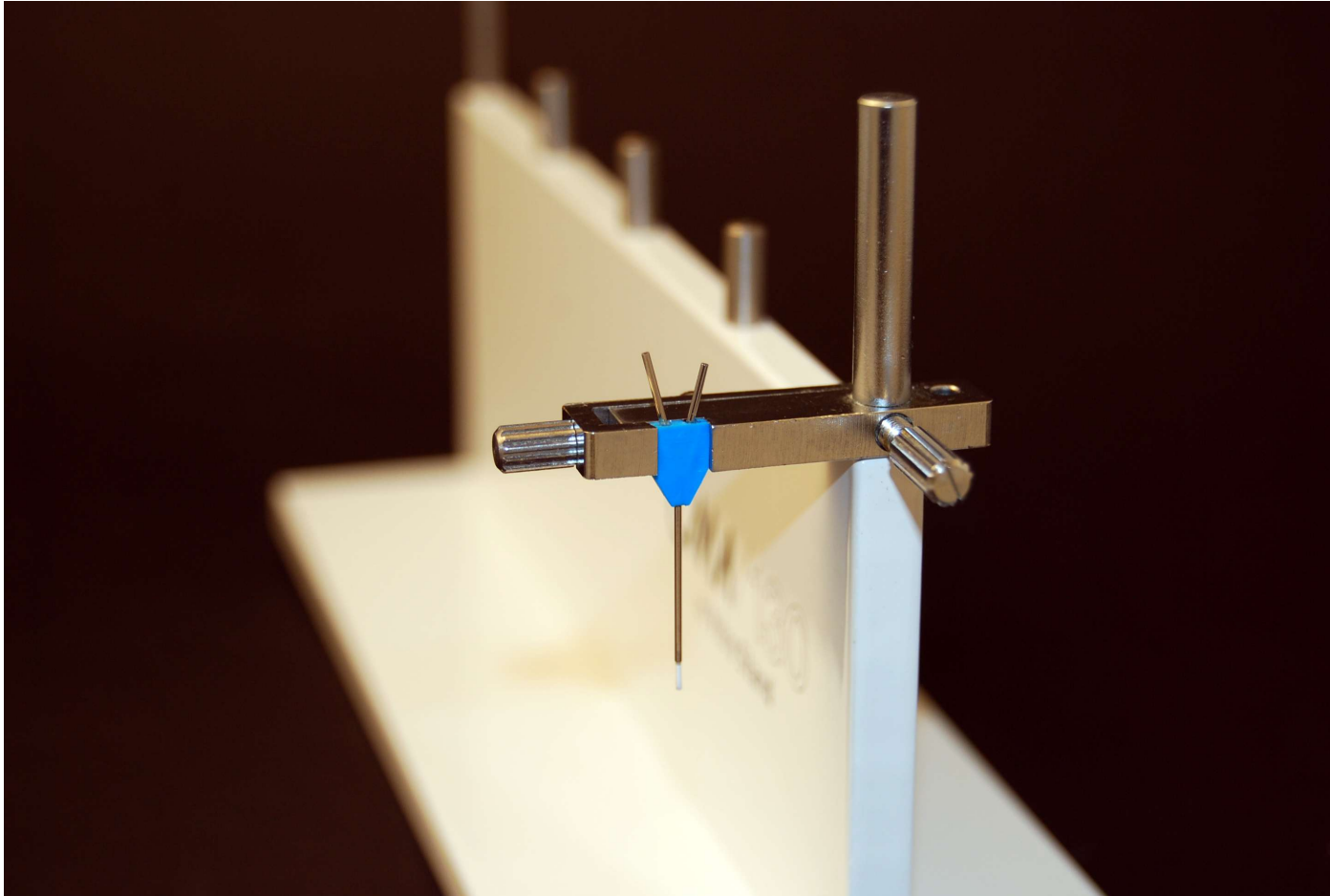
CMA 130 In-Vitro Stand

- Probe handling
- Probe preservation
- Probe Guide handling with stereotaxic instrument

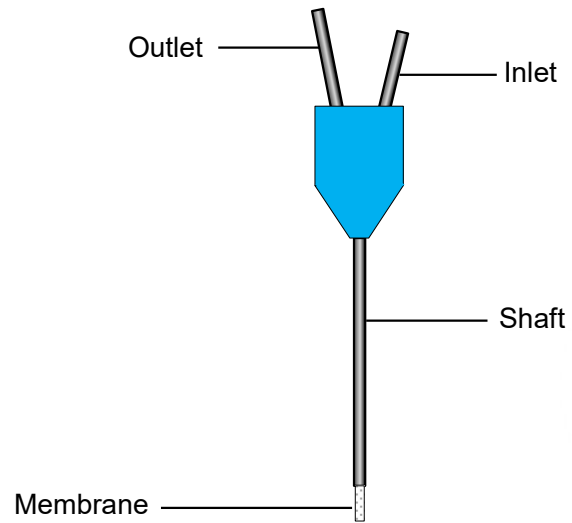
8309102 CMA 130 In-Vitro Stand with CMA 11+12 Clips Includes:

- Stand
- 3 pcs CMA 11 + 12 Clips
- 3 pcs In-Vitro Holders
- 2 Stereotaxic Adapters*
- Connecting Rod for Clip
- 25 pcs Eppendorf Tubes 1.5 mL

*Compatible with KOPF, Stoelting, RWD, HA.
Not compatible with KOPF 1900



CNS Probes for Rats



CMA 12 Probe

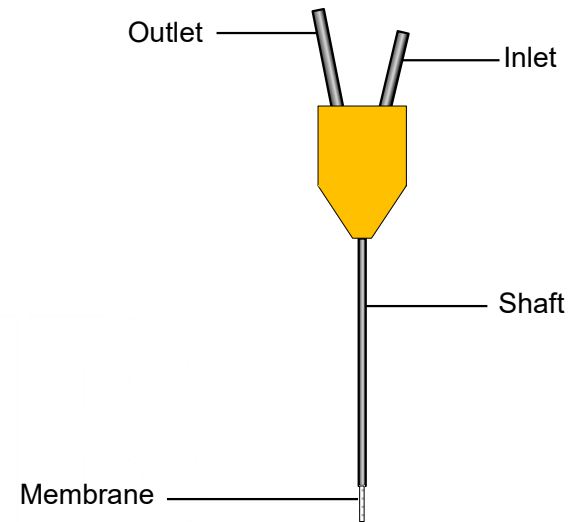
Shaft length: 14 mm

Shaft Diameter: 0.64 mm

Membrane: 1-4 mm

Membrane Diameter: 0.5 mm

Membrane Cut-Off: 20 kDa, 100 kDa



CMA 11 Probe

Shaft length: 14 mm

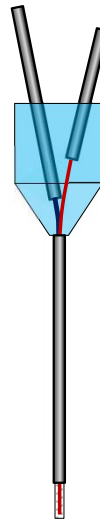
Shaft Diameter: 0.40 mm

Membrane: 1-4 mm

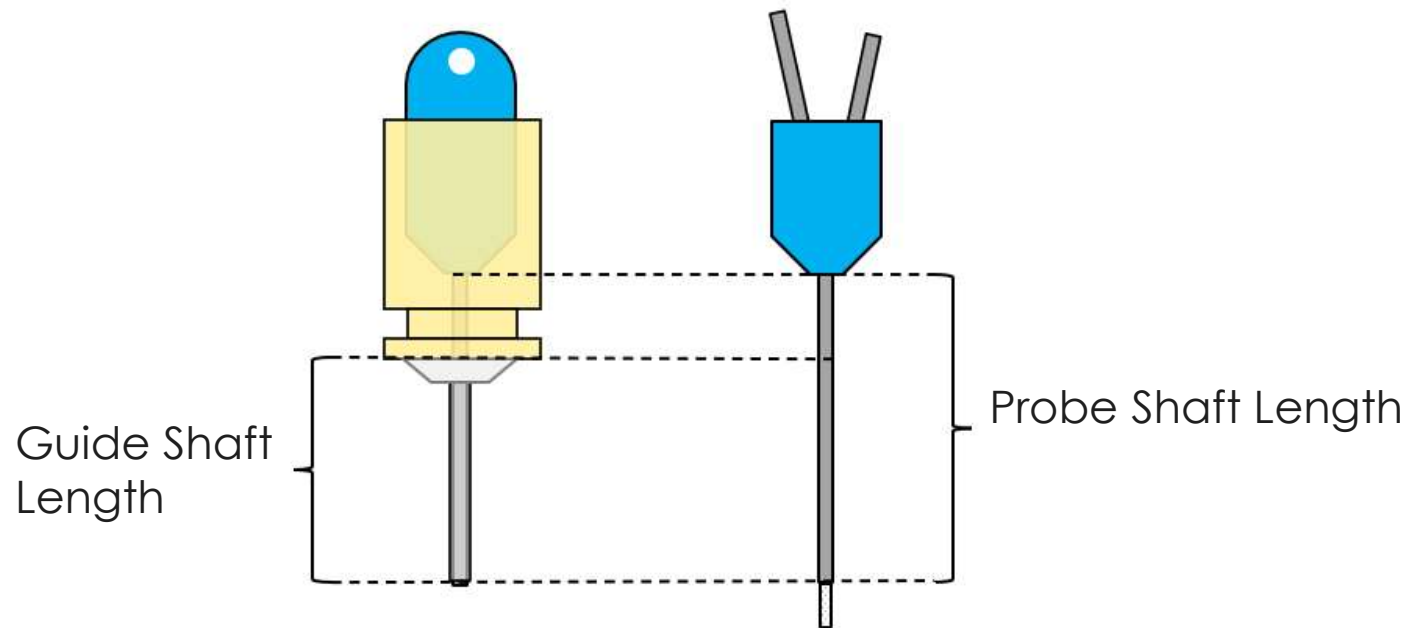
Membrane Diameter: 0.24-0.28 mm

Membrane Cut-Off: 6 kDa, 55 kDa, 500 kDa and 2 MDa

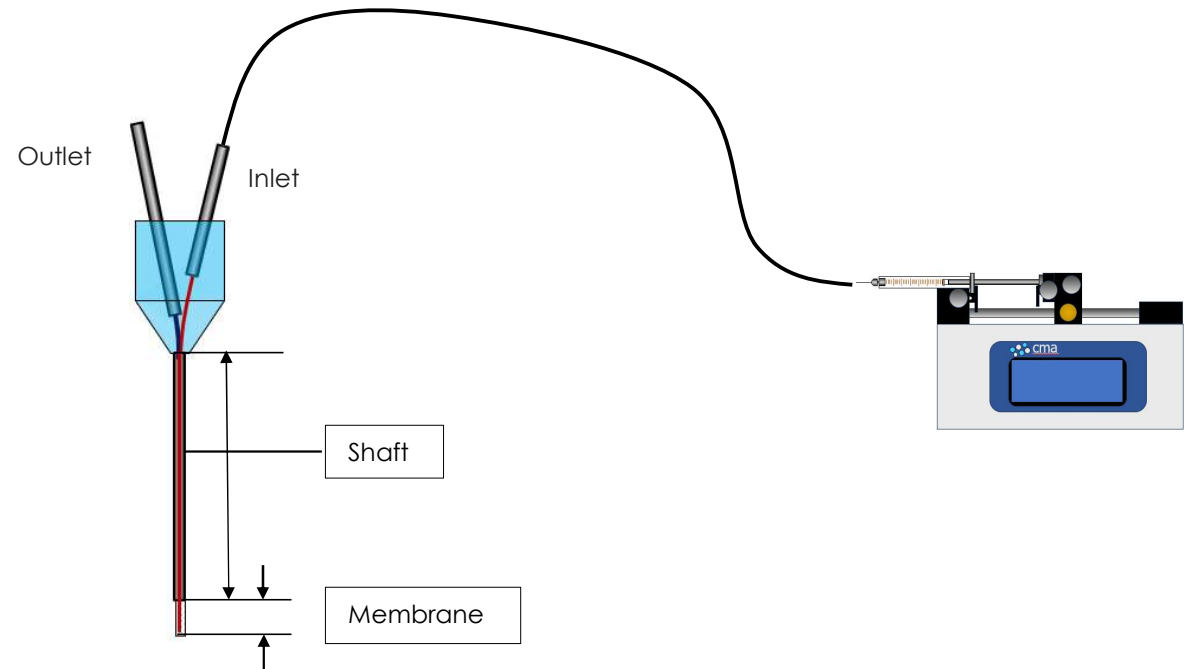
CNS Probes for Rats



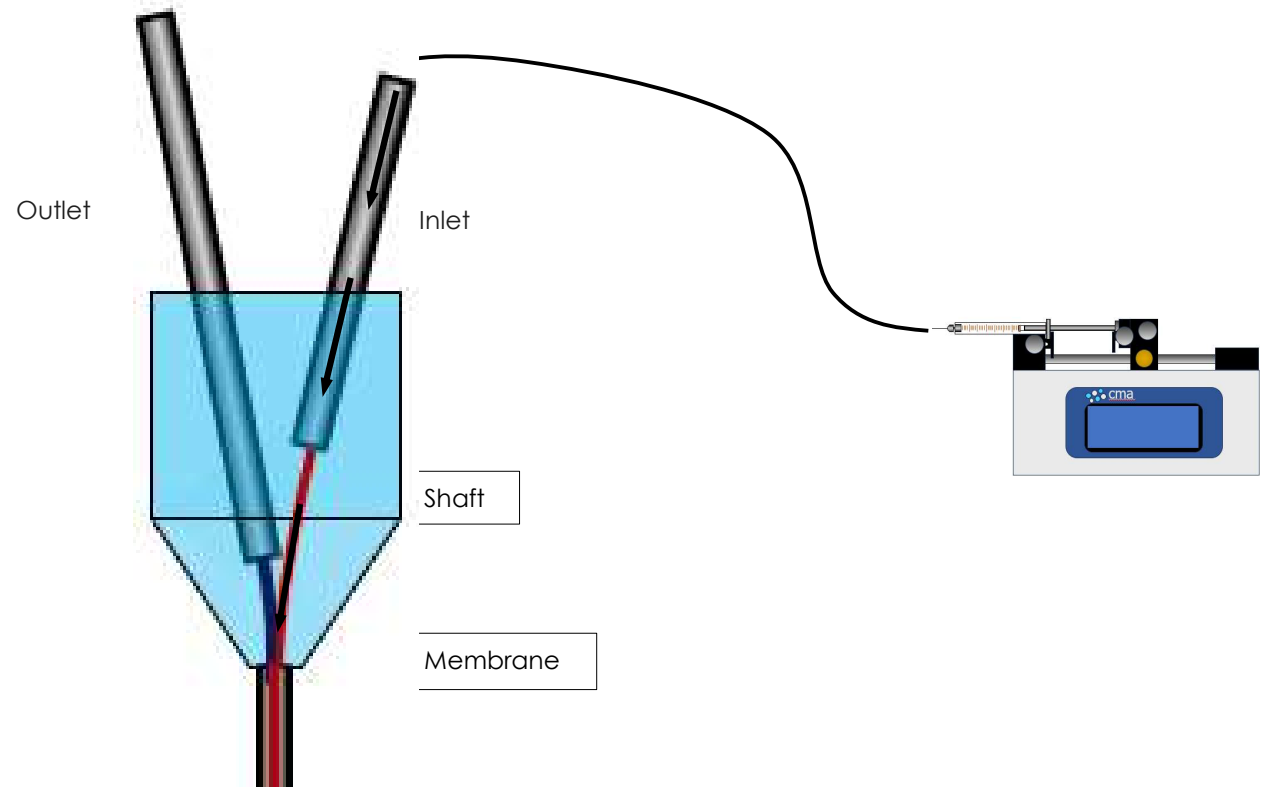
CNS Probe and Guide for Rats



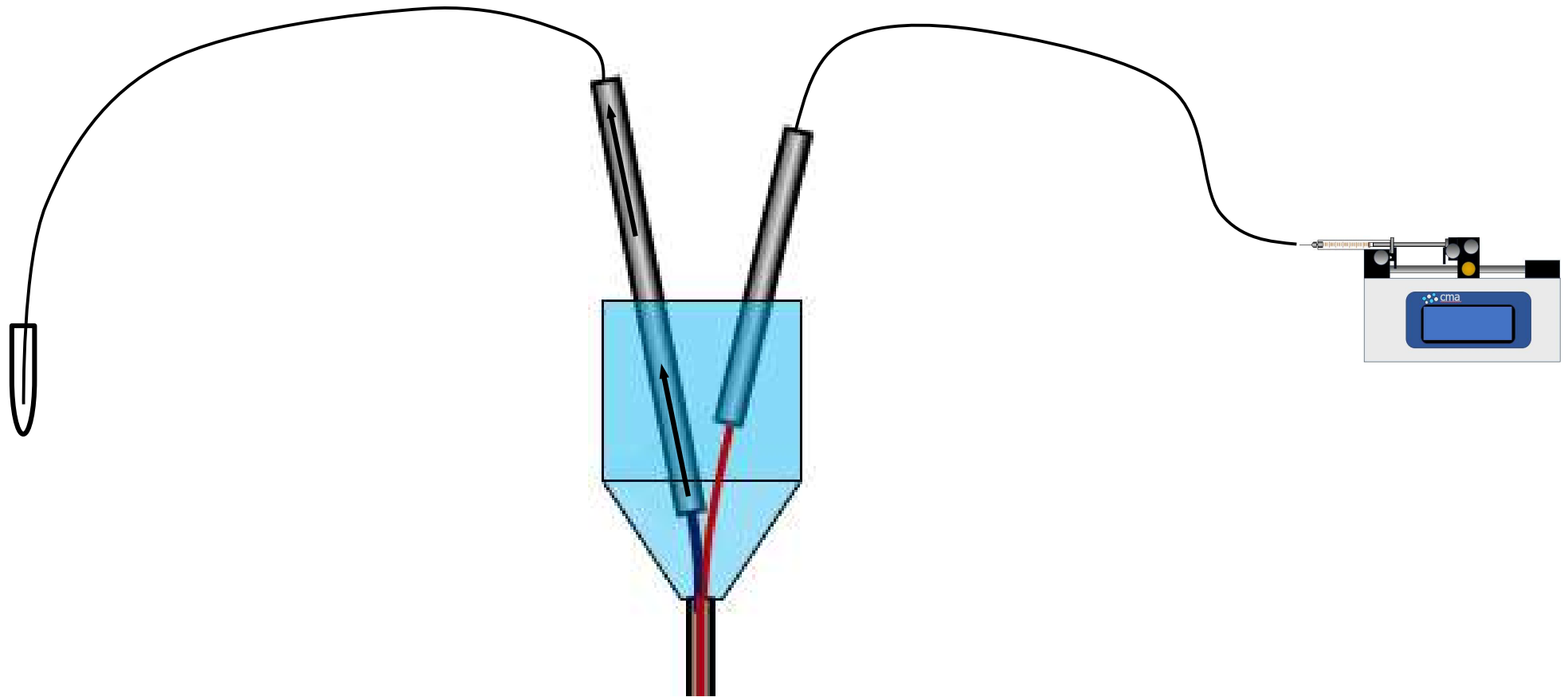
CNS Probes for Rats



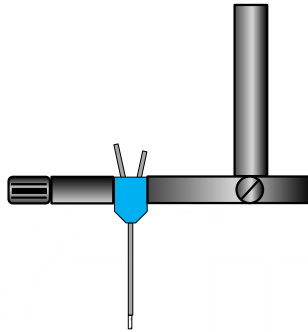
CNS Probes for Rats



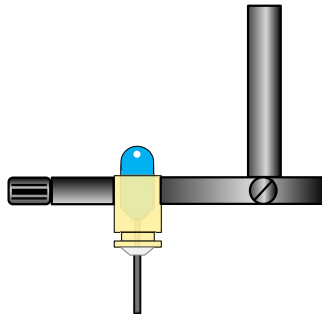
CNS Probes for Rats



Probe/Guide Clip



8309013 CMA 11 + 12 Clip **with**
CMA 12 Probe



8309013 CMA 11 + 12 Clip **with**
CMA 12 Guide

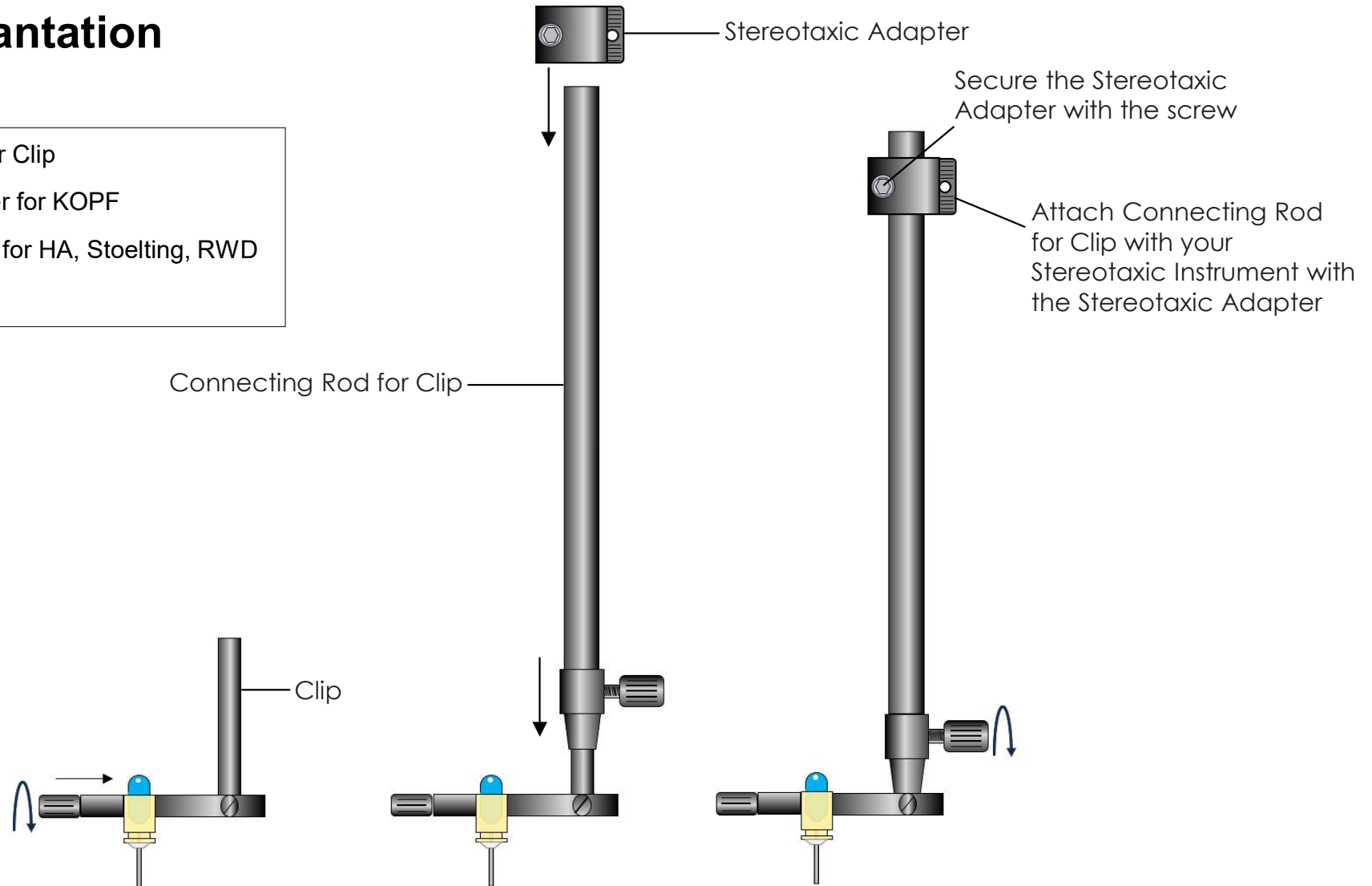
Guide Implantation

8309004 Connecting Rod for Clip

8309005 Stereotaxic Adapter for KOPF

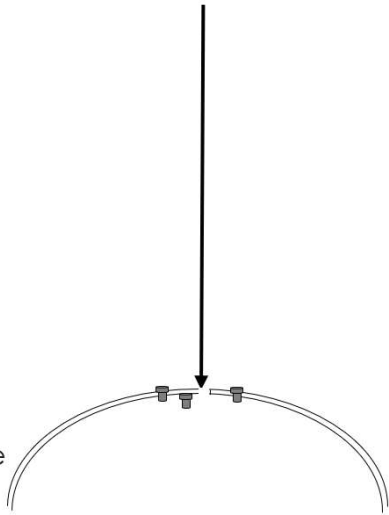
751886 Stereotaxic Adapter for HA, Stoelting, RWD

8309013 CMA 11 + 12 Clip



Drill a 2 mm hole (Rats) in the skull using Trephine Drill Bit (8011158). Open the meninges with a sharp needle. Use a microscope so you don't damage any blood vessels. Place 3-4 Anchor Screws (7431021) in the skull plates.

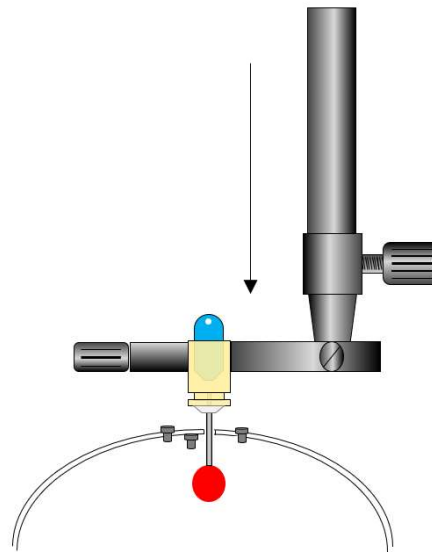
Rodent Skull Plate



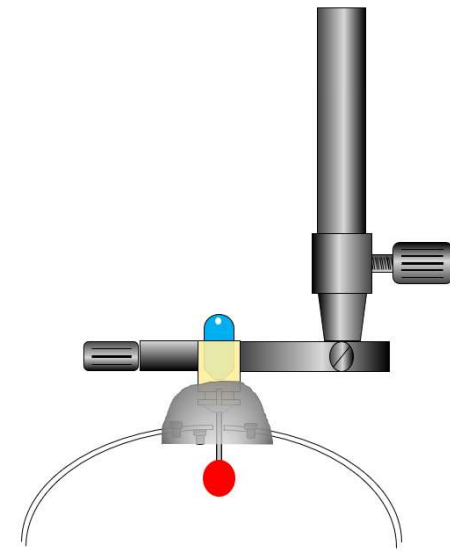
CMA7431021 Anchor Screws



Implantation and secure the Guide



Insert the Guide to the point where the guide tip reaches start of your target area



Secure the guide with Dental Cement and close the wound

Microdialysis Perfusion Fluid for CNS

News!

- 7.5 mL
- New Bottles
- Re-Sealable Cap



CMAP000151 Perfusion Fluid CNS 7.5 mL x 10

Perfusion Fluid CNS is an isotonic sterile perfusion fluid especially developed for Microdialysis in CNS tissue. It is conveniently packed in glass bottles, 7.5 mL, ready to use. Perfusion Fluid CNS is cleared as a medical device according to the CE medical directive. NaCl 147 mmol/L, KCl 2.7mmol/L, CaCl₂ 1.2 mmol/L, MgCl₂ 0.85 mmol/L. This perfusion fluid is intentionally unbuffered. The dialysate will therefore take on the same pH as the surrounding tissue.



CMAP8050151 Perfusion Fluid CNS Dextran 7.5 mL x 2 Dextran MW 500 kDa 3%

Perfusion Fluid CNS is an isotonic sterile perfusion fluid especially developed for Microdialysis in CNS tissue. It is conveniently packed in glass bottles, 7.5 mL, ready to use. Perfusion Fluid CNS is cleared as a medical device according to the CE medical directive. NaCl 147 mmol/L, KCl 2.7mmol/L, CaCl₂ 1.2 mmol/L, MgCl₂ 0.85 mmol/L. This perfusion fluid is intentionally unbuffered. The dialysate will therefore take on the same pH as the surrounding tissue.

NOTE: not recommended to be used in combination with Swivels. Use Rotating Cage System. Please contact CMA for more information.

Microdialysis Perfusion Fluid for CNS



507316 Artificial CSF, 6 x 25 mL Vials

Artificial CSF Perfusion Fluid is an alternative to the above Perfusion Fluid CNS. There are small variations in composition and Artificial CSF is buffered solution with pH 7.2 +/- 0.1

Artificial cerebrospinal fluid (aCSF) is commonly used when sampling from brain interstitial fluid. This solution closely matches the electrolyte concentrations of CSF. It is prepared from high purity water and analytical grade reagents. It is microfiltered and sterile. Final Ion Concentrations (in mM): Na 150; K 3.0; Ca 1.4; Mg 0.8; P 1.0; Cl 155. pH 7.2 +/-0.1.

Microdialysis Perfusion Fluid for Peripheral Tissue / Organ

News!

- 7.5 mL
- New Bottles
- Re-Sealable Cap



CMAP000034 Perfusion Fluid T1

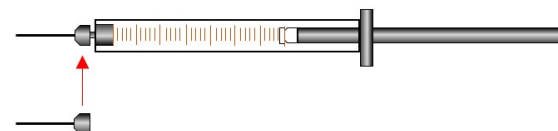
Perfusion Fluid T1 is an isotonic sterile perfusion fluid especially developed for Microdialysis in CNS tissue. It is conveniently packed in glass ampoules, 7.5 mL, ready to use. Perfusion Fluid T1 is cleared as a medical device according to the CE medical directive. NaCl 147 mmol/L, KCl 2.7mmol/L, CaCl₂ 1.2 mmol/L, MgCl₂ 0.85 mmol/L. This perfusion fluid is intentionally unbuffered. The dialysate will therefore take on the same pH as the surrounding tissue.

CMA's 1, 2.5, 5 and 10 mL Microsyringes, glass syringes with a 60 mm piston stroke. Syringe Needles are pretreated to reduce degradation of labile molecules, such as catecholamines and their metabolites during a microdialysis experiment

The 5 and 10 mL also exist in a Luer Lock version

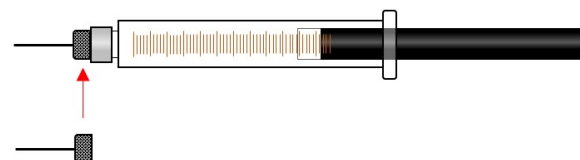
CMA8309020, 1 mL Gastight*
CMA8309021, 2.5 mL Gastight*

CMA7431083, Replacement Needles
for 1 and 2.5 mL Microsyringes, 5/pkg



CMA8309022, 5 mL Gastight*
CMA8309023, 10 mL Gastight*

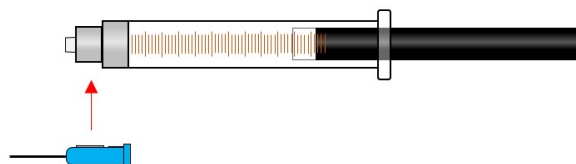
CMA8309687, Replacement Needles
for 5 and 10 mL Microsyringes, 5/pkg



Glass Syringe with Luer Stub

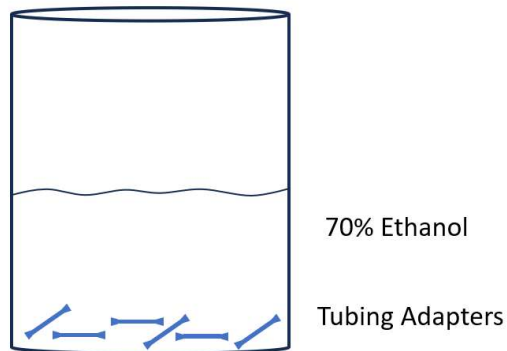
CMA8309022L, Microsyringe 5 mL W/Luer Lock
CMA8309023L, Microsyringe 10 mL W/Luer Lock

641490 Luer Stub 23 Ga



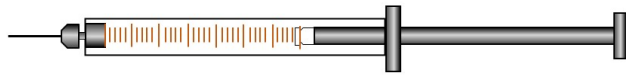
*Custom Made 23 Ga Tip

Tubing Adapter



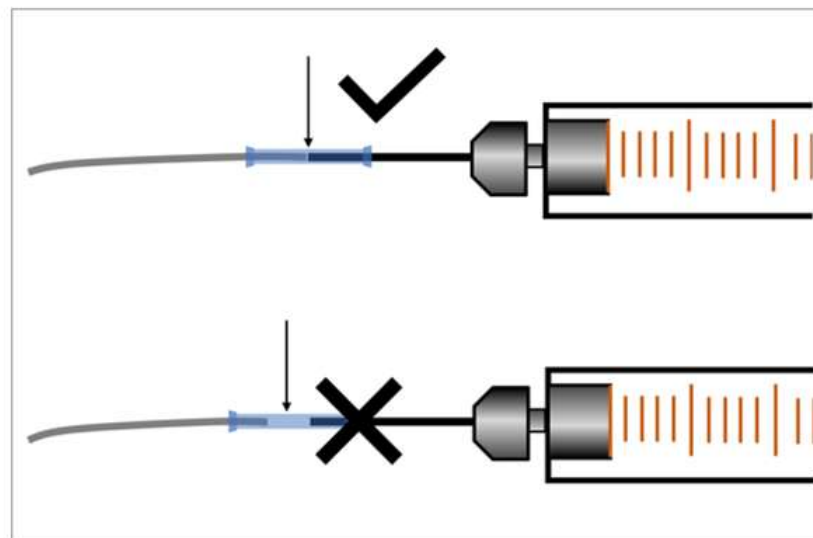
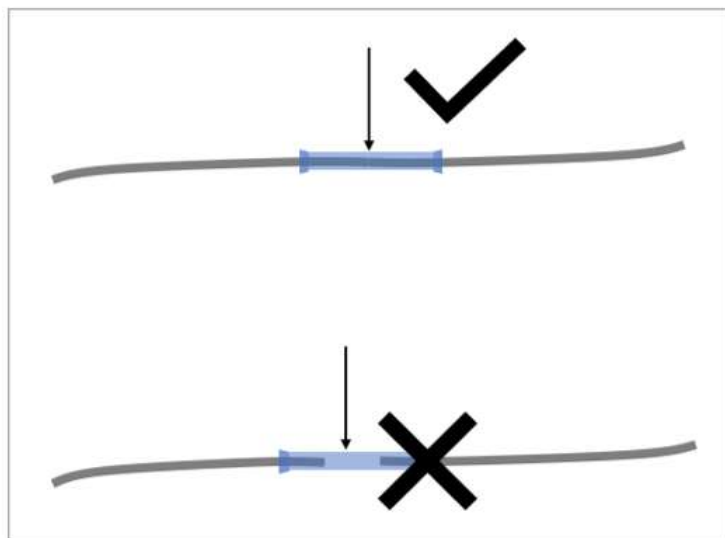
Soak the Tubing Adapters* into 70% Ethanol for 1 hour or more. The Tubing Adapters swell in 70% Ethanol and shrink back in air, ensure tight, zero internal volume connections between FEP Tubing and the probe, swivel liquid switch and syringes. Tubing adapters can be left in Ethanol for a long time (months), so you always have tubing adapters ready for use.

*CMA3409500 Tubing Adapters 10/pkg

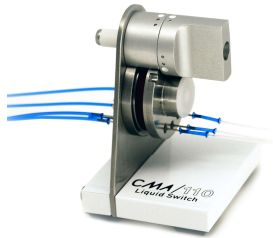


Fill a Syringe with Perfusion Fluid. The Perfusion Fluid should be at **room temperature** or slightly higher. This makes it easier to remove air bubbles and prevents air bubbles being formed during the experiment. Make sure that even the smallest air bubbles are gone.

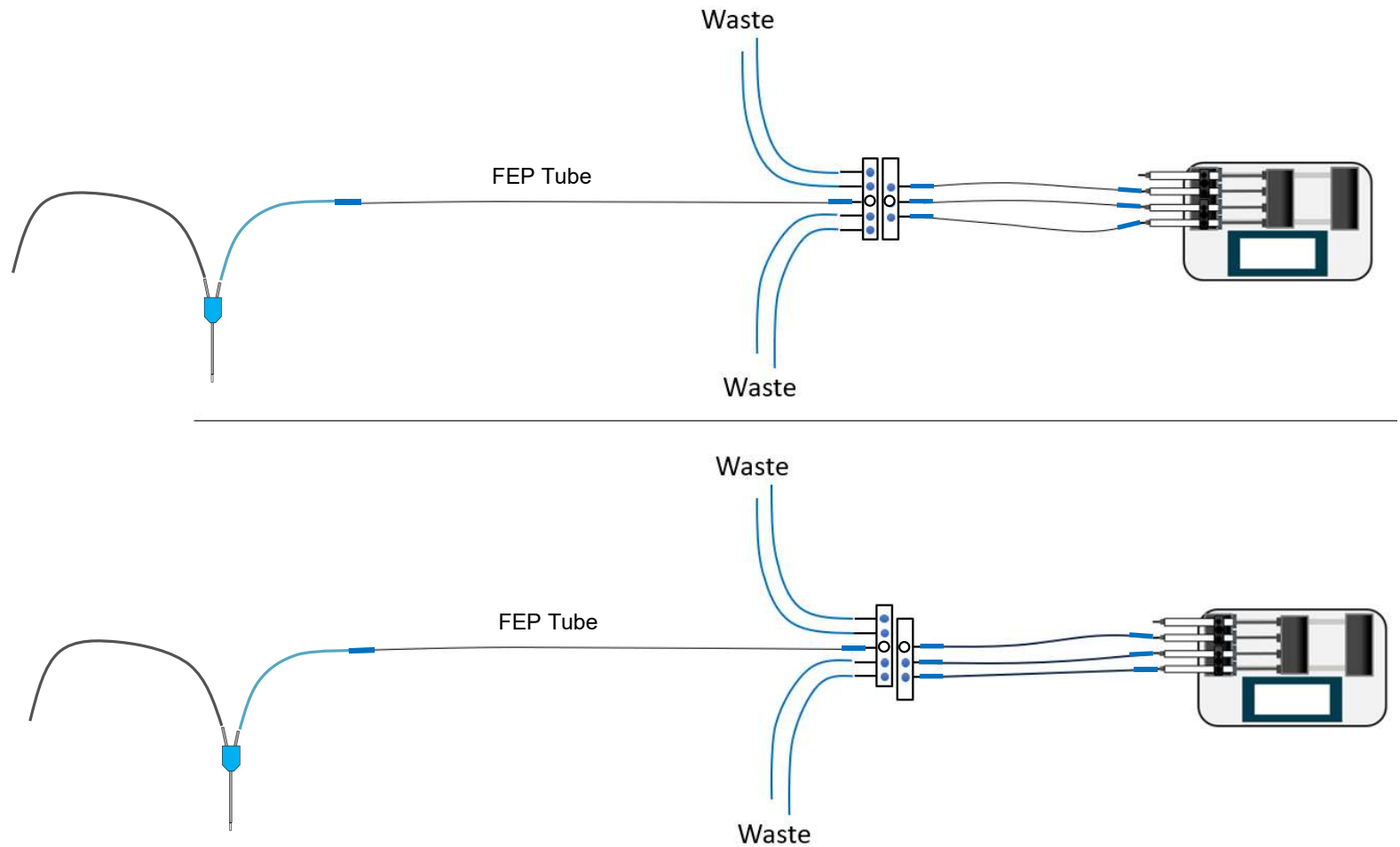
Make sure the ends meet for zero dead volume and that the tubing adapter is not exposed to the perfusion fluid. Once the Tubing Adapters are dry, they make sure of a tight, leak free, connection.



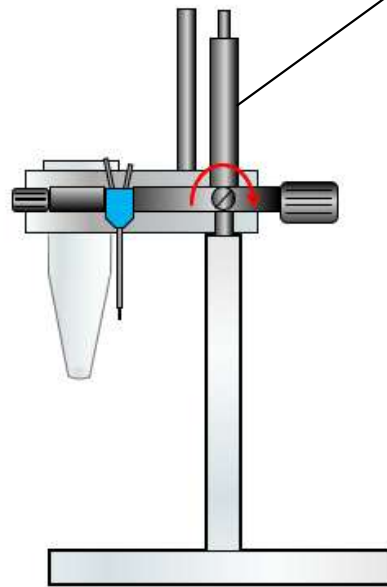
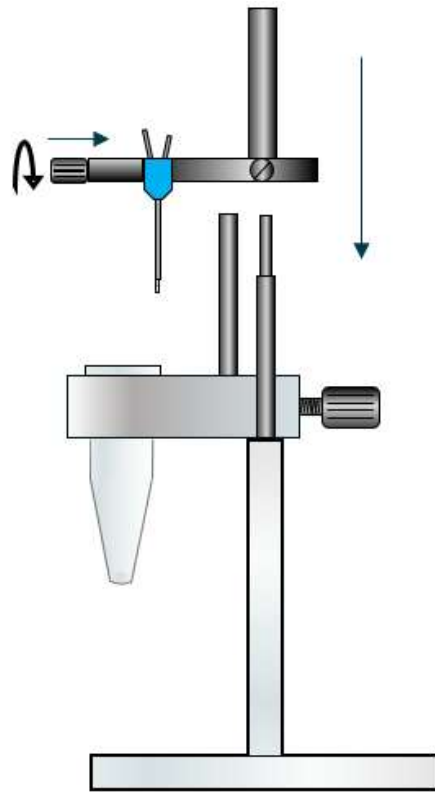
CMA 110 Liquid Switch



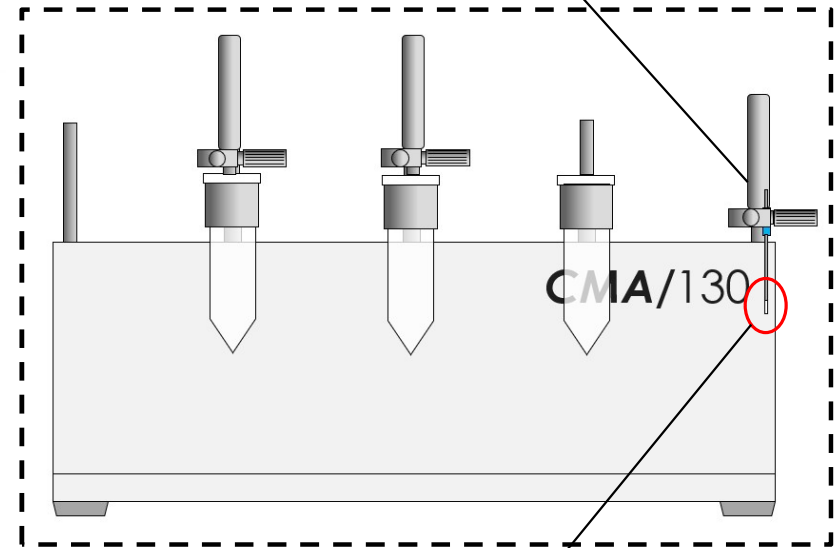
The CMA 110 Liquid Switch permits manual switching between up to three perfusion lines (syringes) and a microdialysis probe. This makes it possible to change different solutions instantaneously without any risk of introducing air bubbles into the microdialysis probe.



Probe Handling



Take the probe clip with the probe and place it on the in-vitro stand **outer pin position** and tighten the screw



When priming the probe with perfusion fluid the membrane must be in air

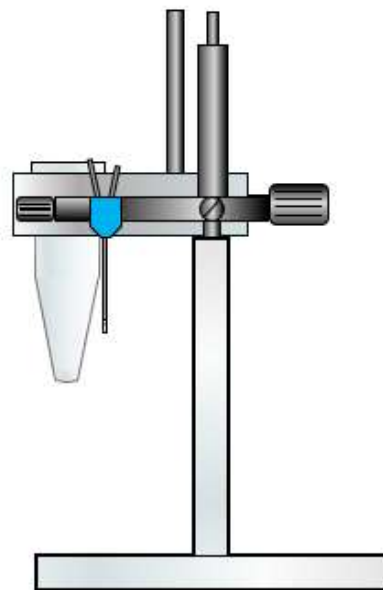
CMA 130 In-Vitro Stand



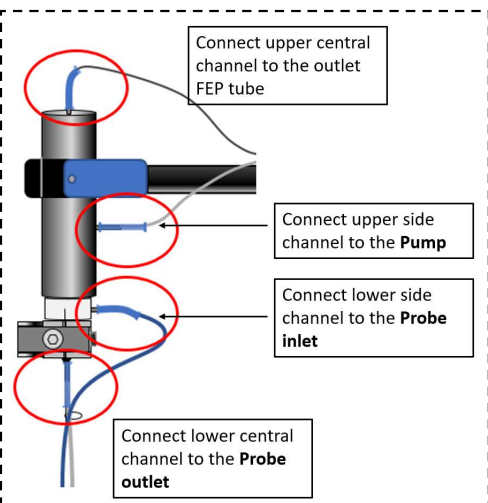
CMA3409501 FEP Tubing 1 m
CMA8409501 FEP Tubing 1 m x 10

Fill a syringe with Perfusion Fluid.
Connect a FEP tubing to the Syringe
Tip by using a Tubing Adapter. Fill the
FEP Tubing with Perfusion Fluid

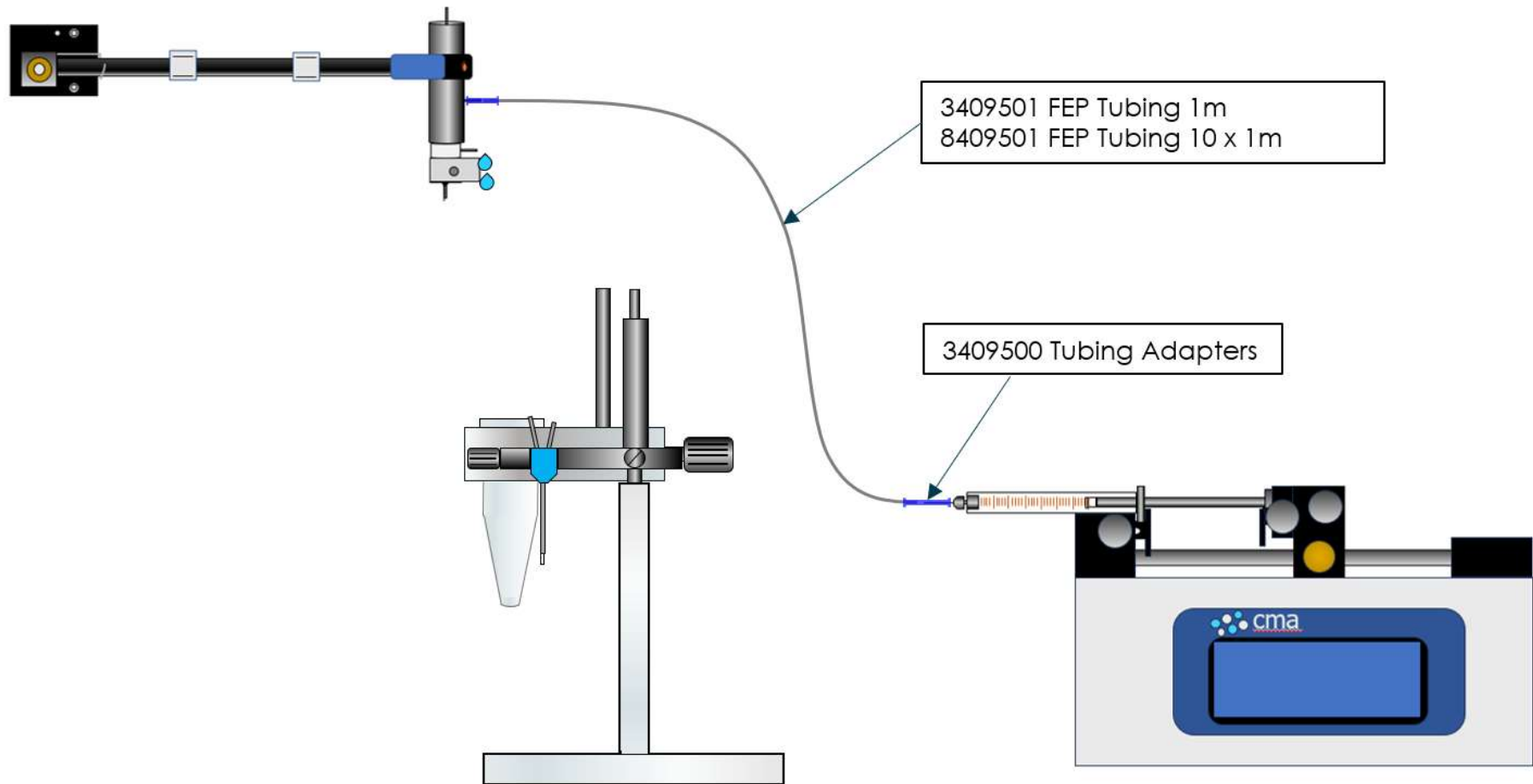
Inlet



CMA3409500 Tubing Adapters 10/pkg

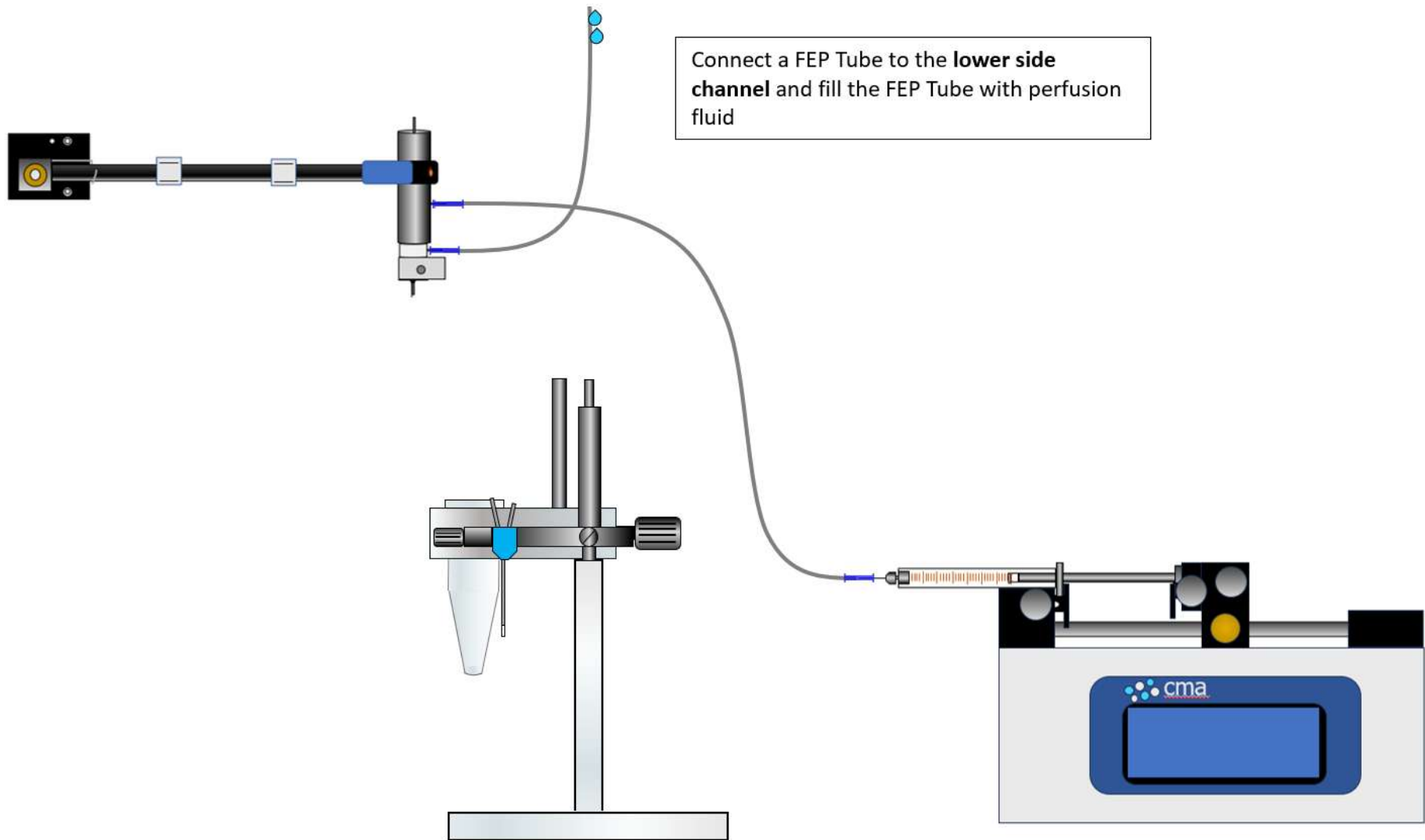


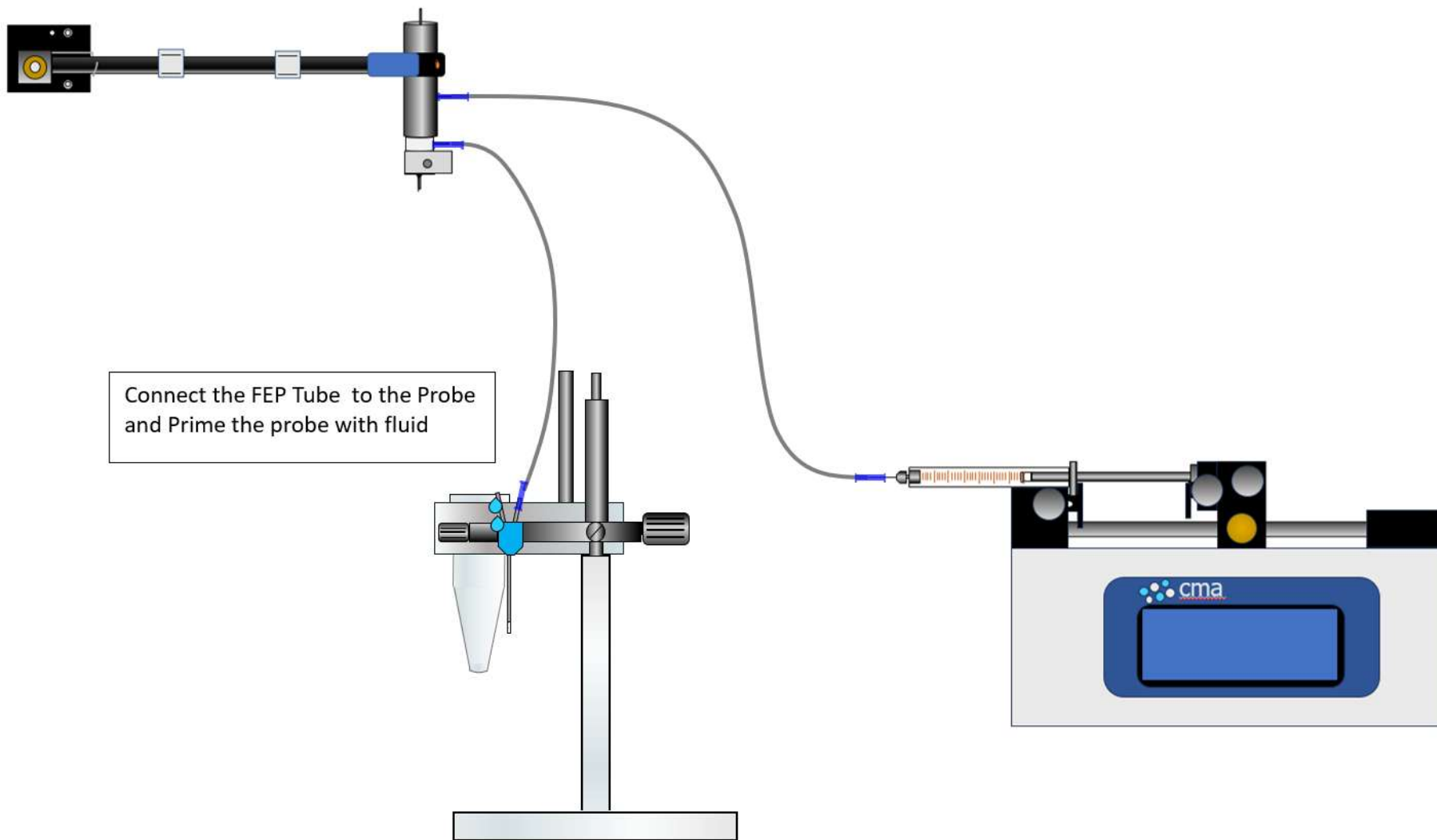
Connect the FEP Tube to the Swivel Side Channel and fill it with Perfusion Fluid

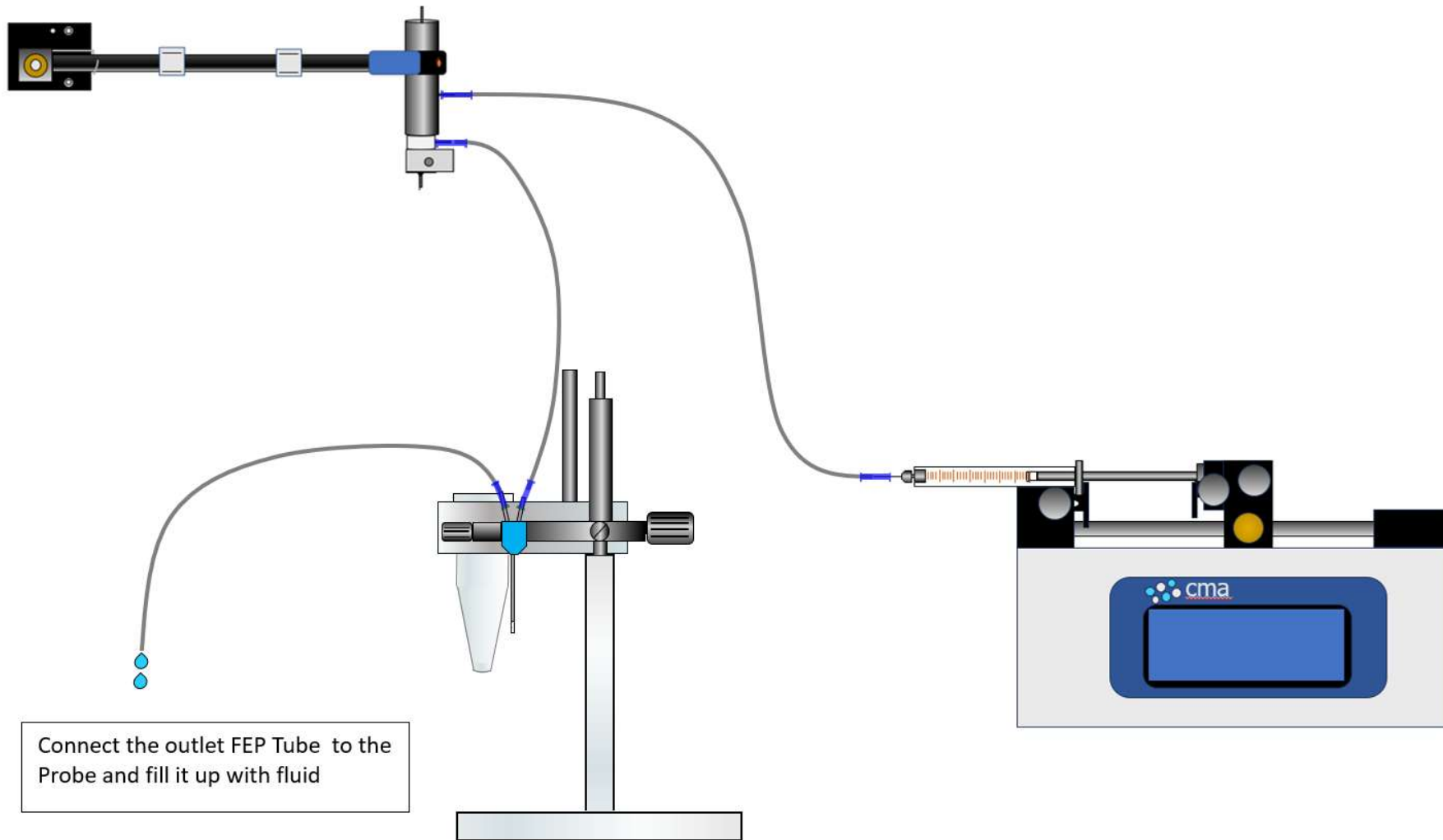


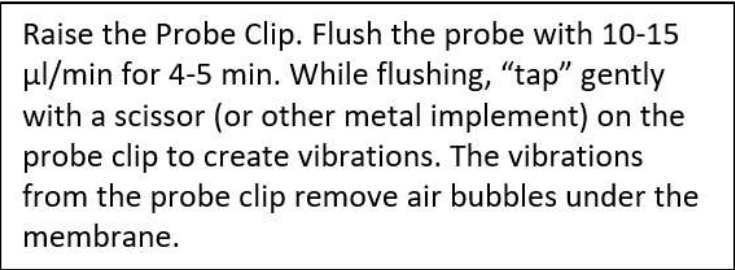
3409501 FEP Tubing 1m
8409501 FEP Tubing 10 x 1m

3409500 Tubing Adapters

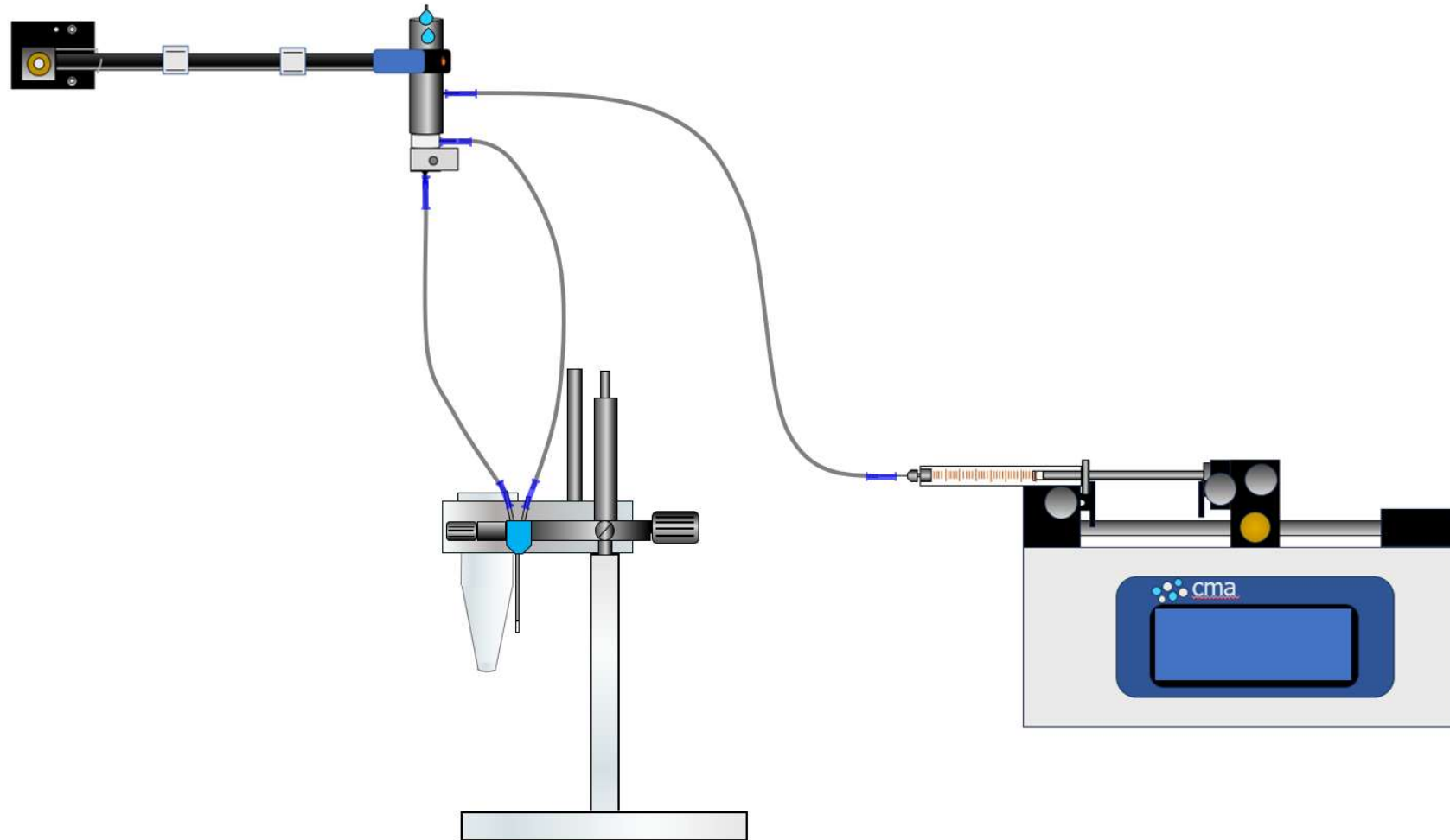




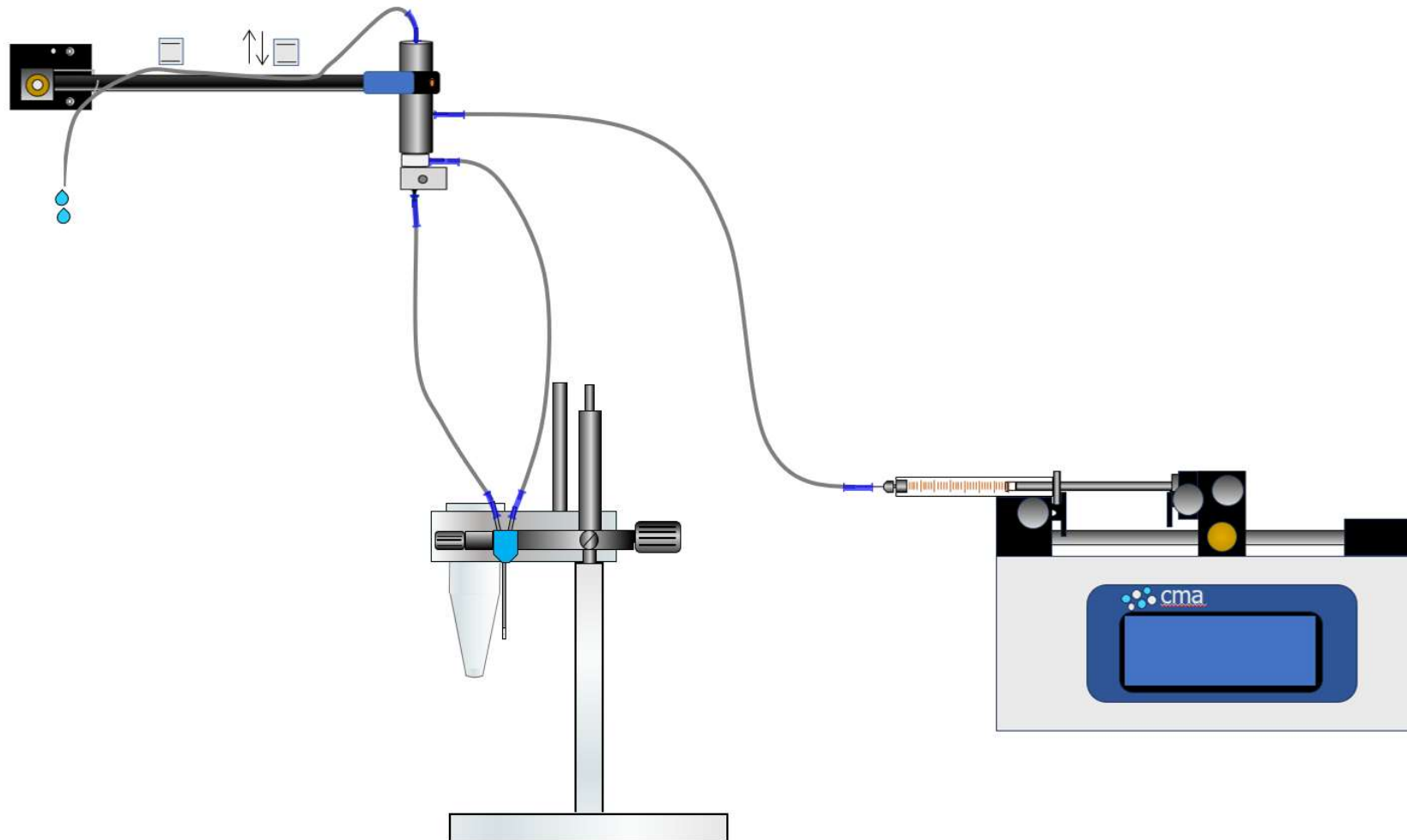


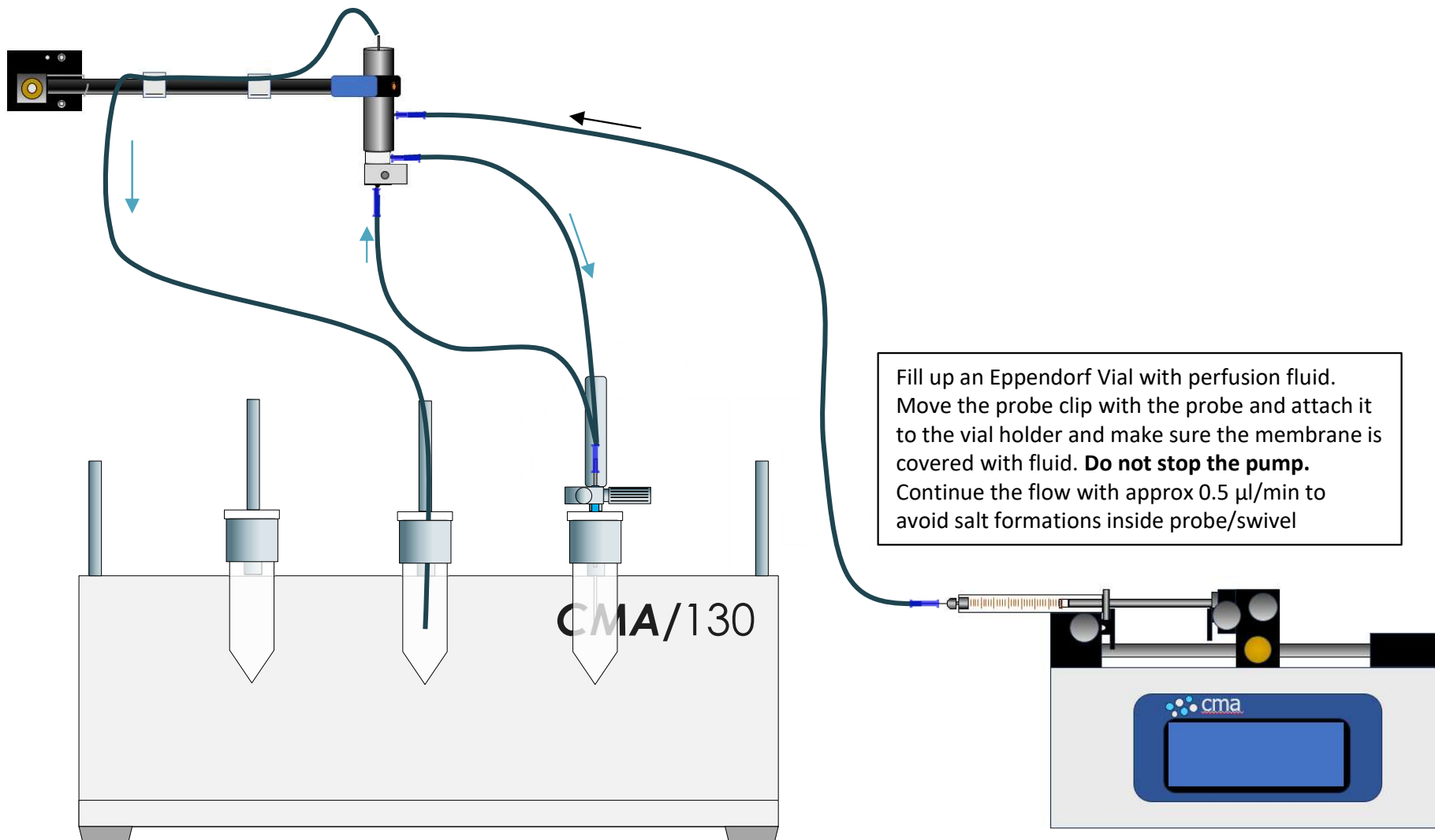


Connect the outlet FEP Tube to the Swivel's lower Center Channel and fill the it with fluid



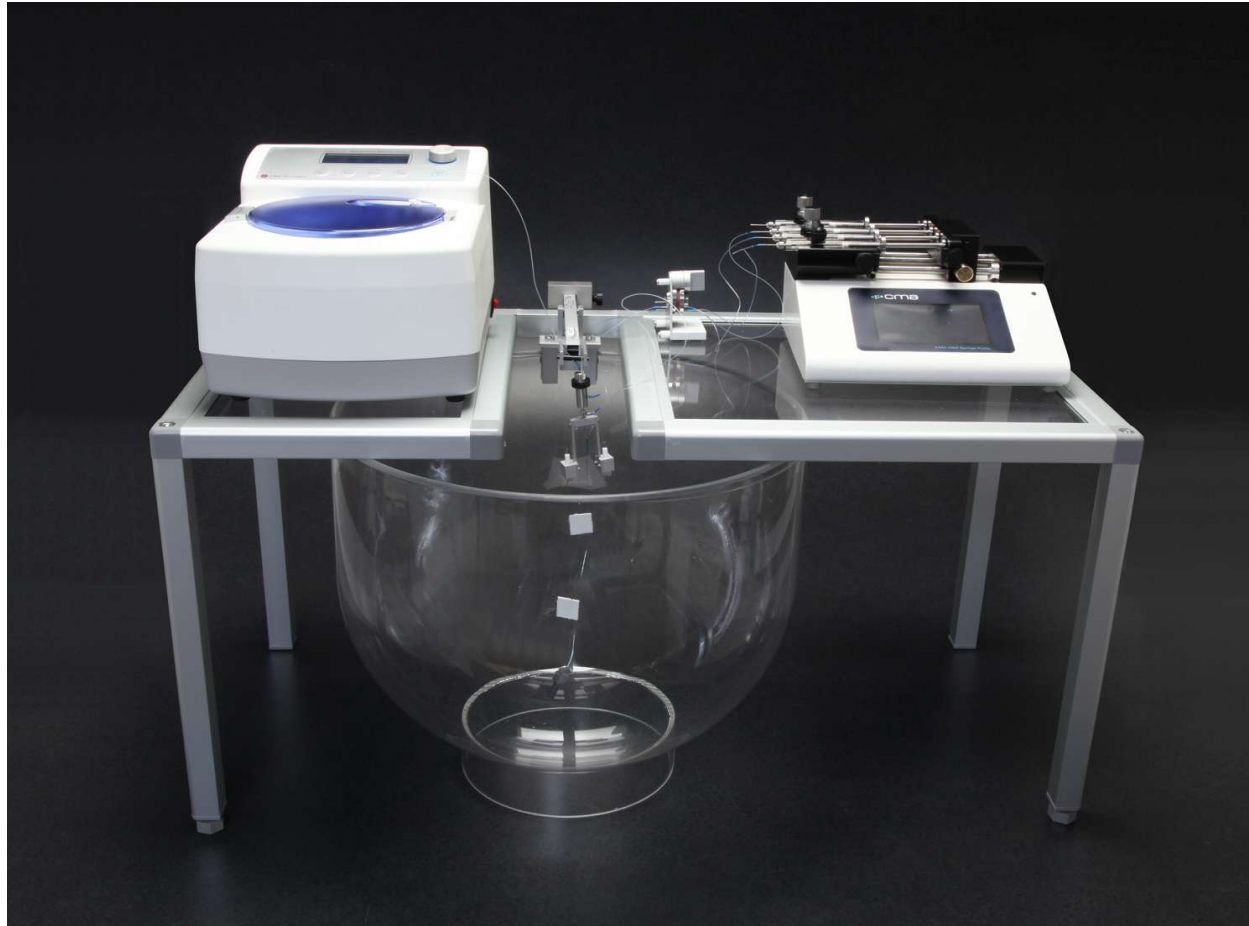
Connect the outlet FEP Tube to the Swivel's upper Center Channel and fill the it with fluid. Secure the FEP tube on the balance arm



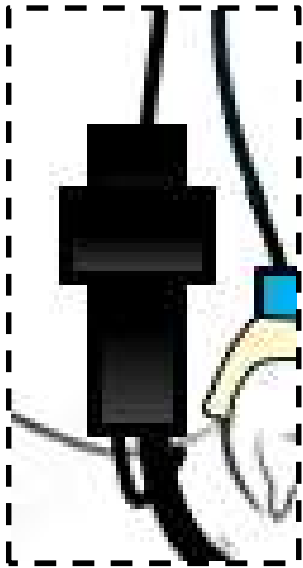


CMA 120 Bowl

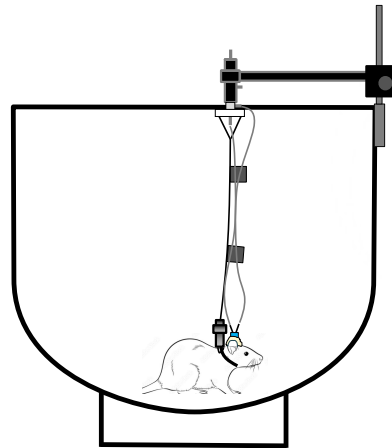
with CMA 120 Swivel Assembly



CMA Collar Tether*

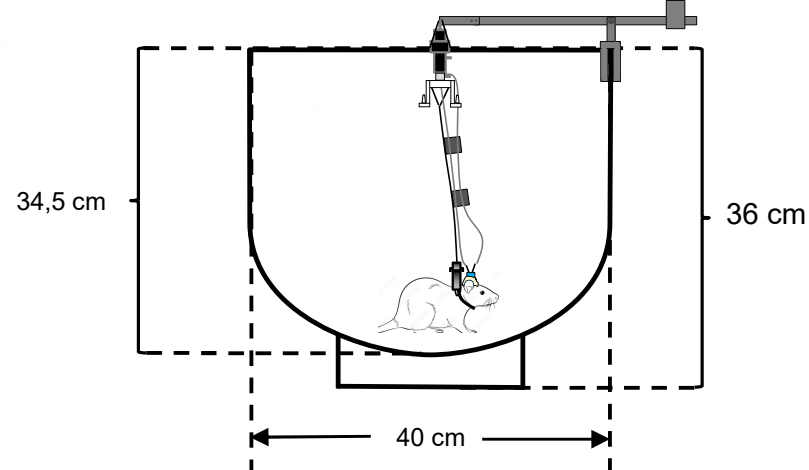


A steel wire extending from a collar on the animal turns the swivel. The tubing is taped to the two flags on the wire for support. The Bowl is compatible with both CMA 120 Balance Arm and Instech Multi-Axis Counter-Balanced arm



610023 Multi-Axis Counter-Balanced Lever Arm, 2409090 CMA 120 Swivel Assembly without Swivel and 610004 Swivel.

Bowl is delivered with pre-drilled holes for easy mounting of the balance arm



8309032 CMA 120 Balance Arm
8309048 CMA 120 Swivel Assembly

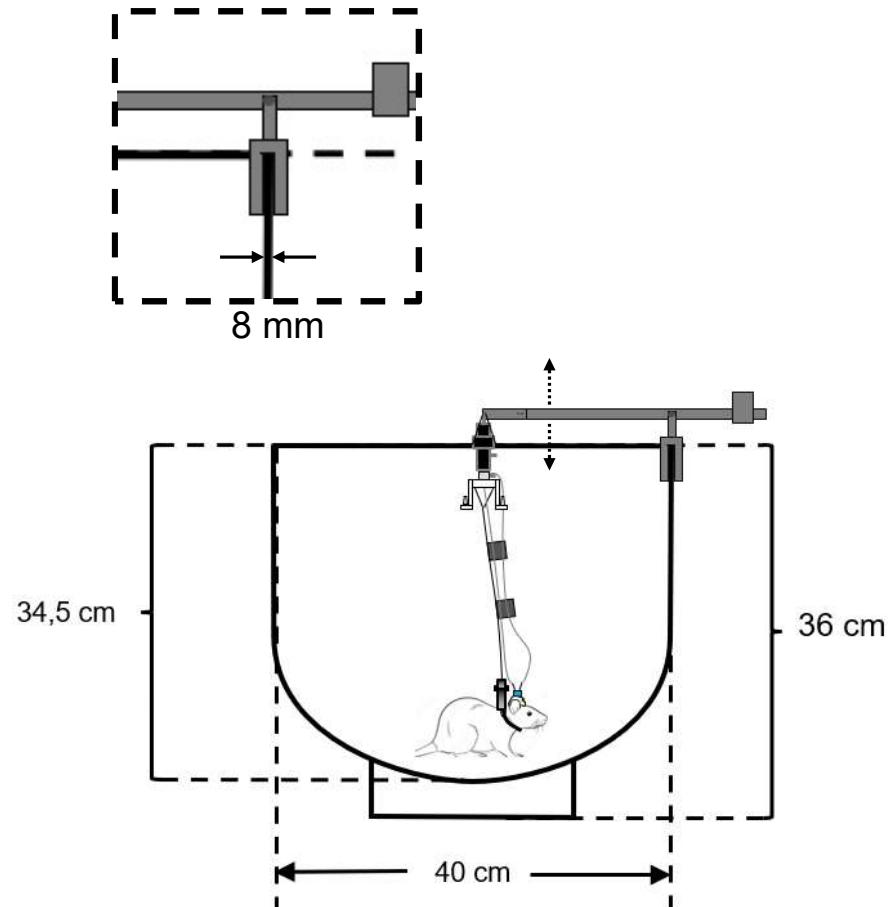
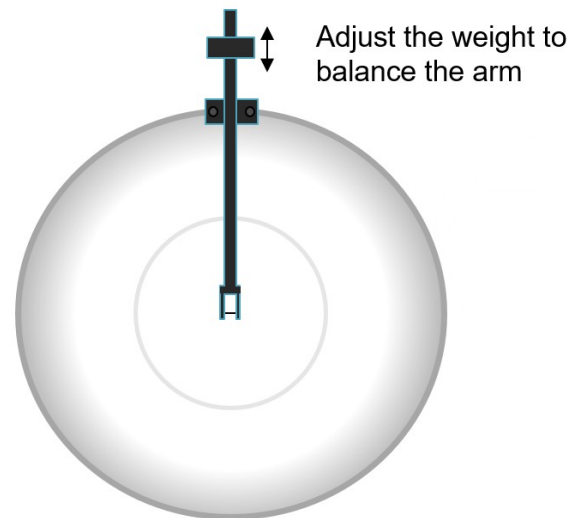
*Included in CMA8409029



<https://microdialysis.com/products/instruments/cma-120-system-for-freely-moving-animals.html>

CMA 120 Bowl

with CMA 120 Swivel Assembly



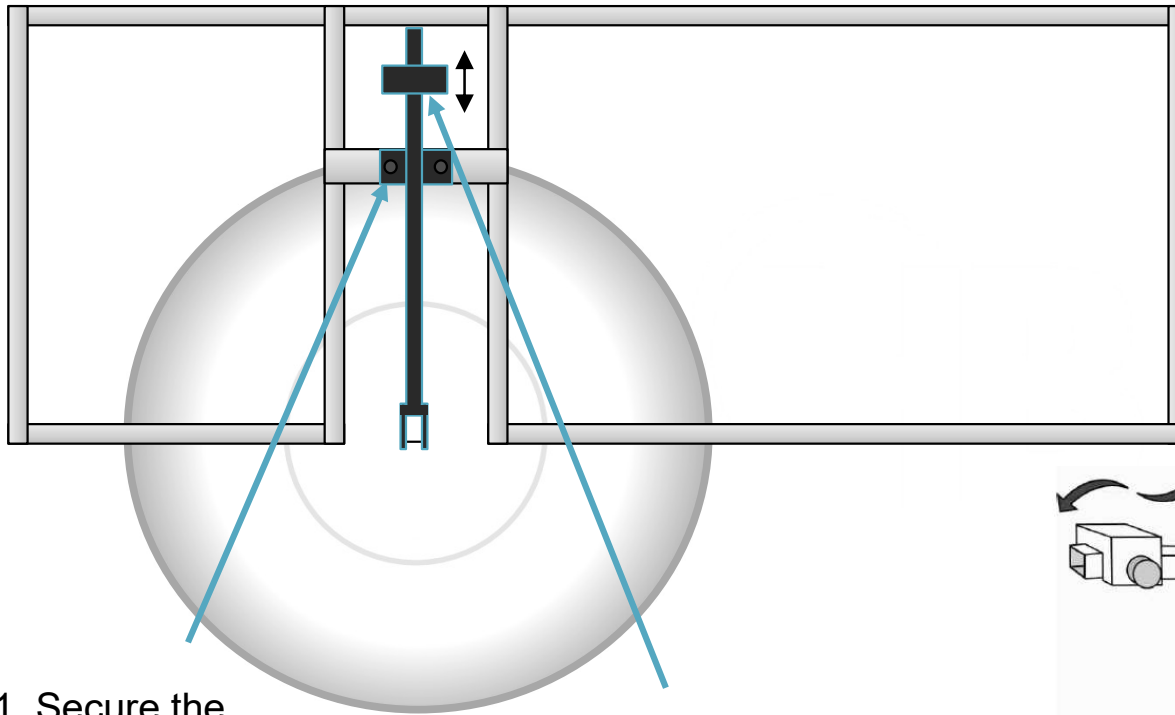
8309032 CMA 120 Balance Arm*
8309048 CMA 120 Swivel Assembly*

*Included in CMA8409029



CMA 120 Table

with CMA 120 Balance Arm



1. Secure the
balance arm on the
table with 2 screws

2. Adjust the weight

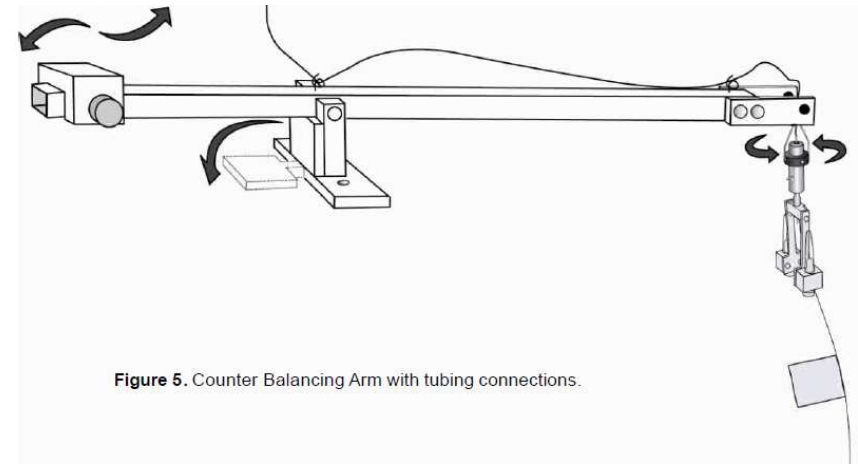
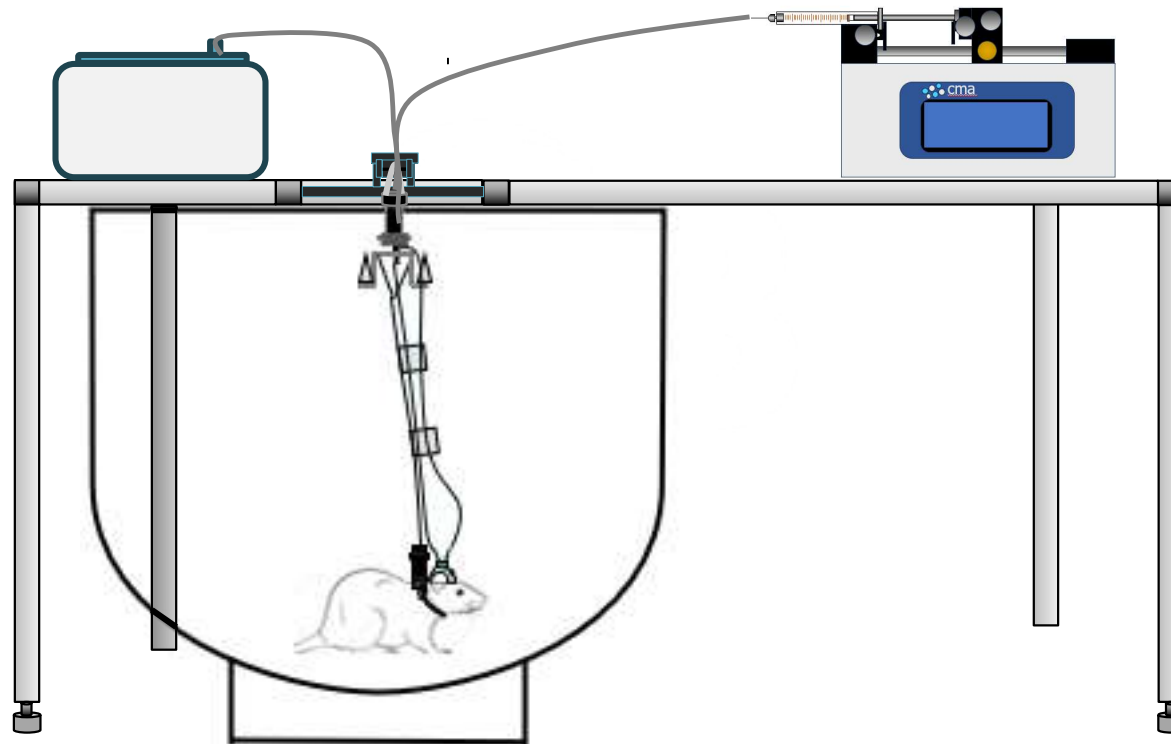


Figure 5. Counter Balancing Arm with tubing connections.

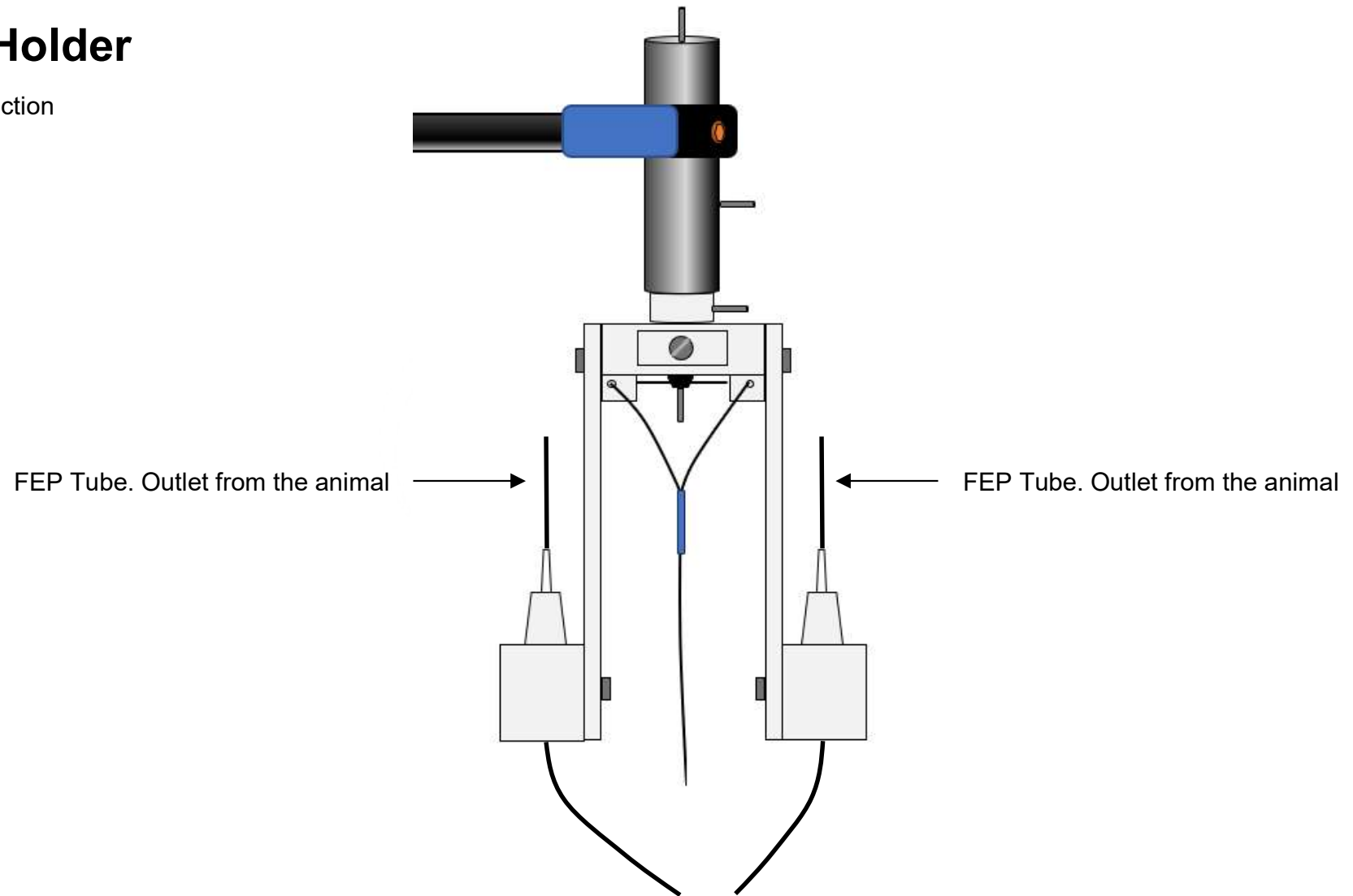
CMA 120 Table

with CMA 120 Balance Arm

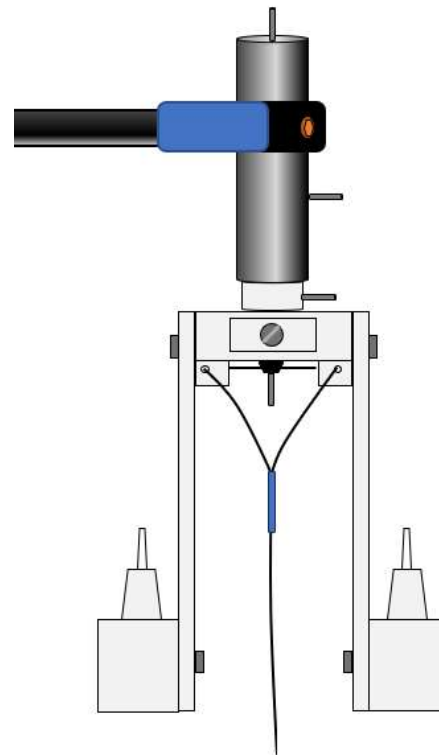
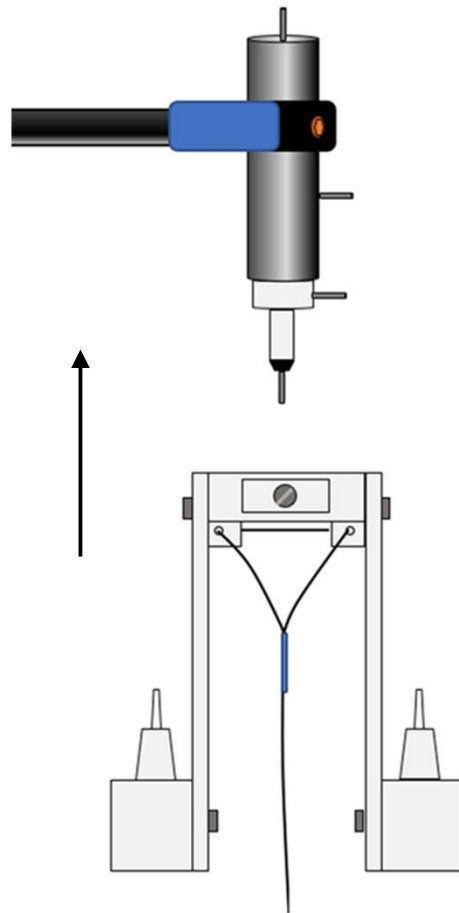


Dual Vial Holder

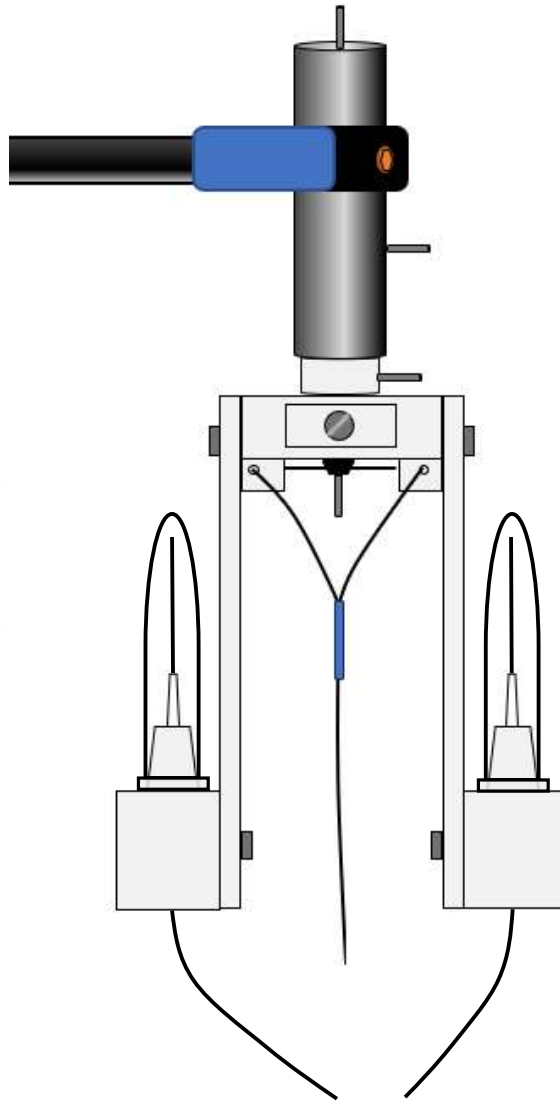
Single or Dual collection



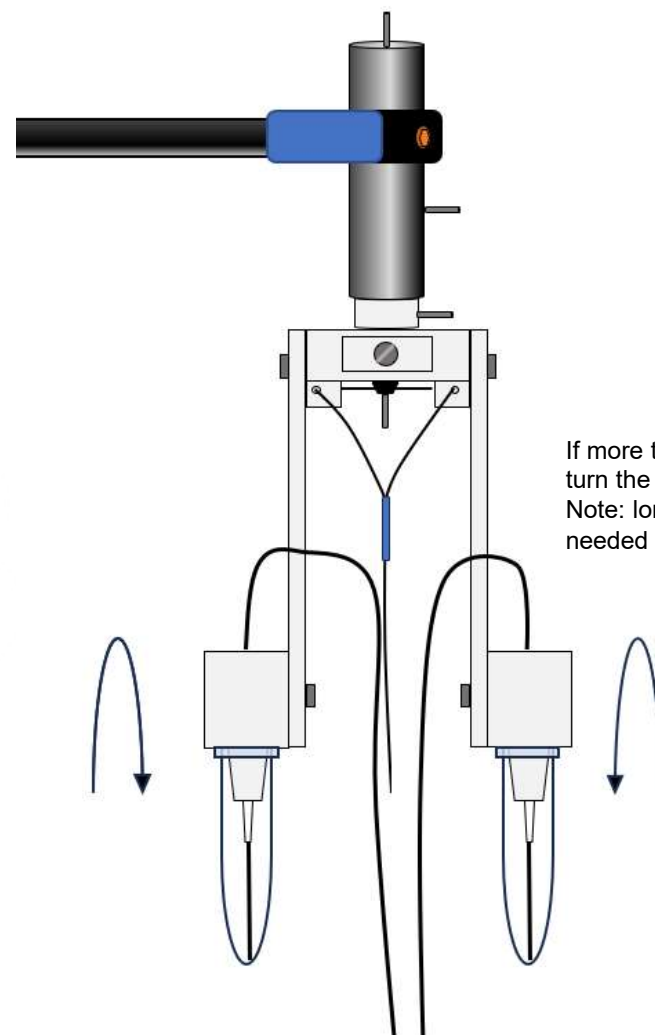
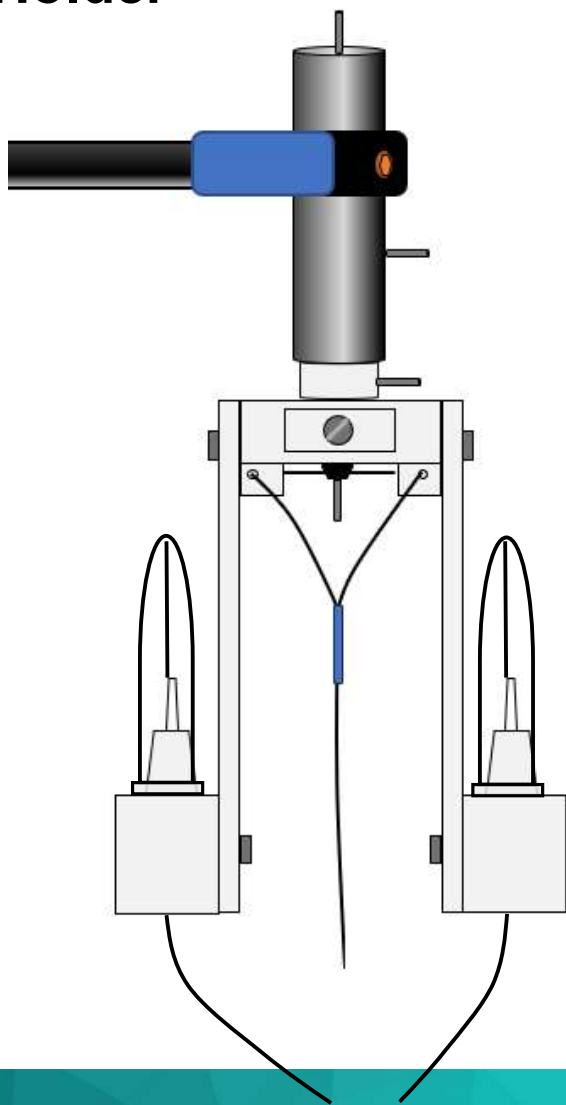
Dual Vial Holder



Dual Vial Holder

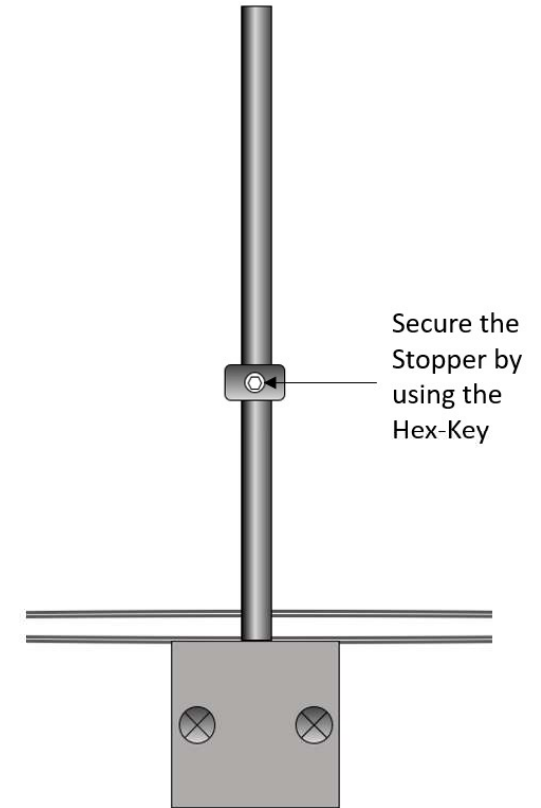
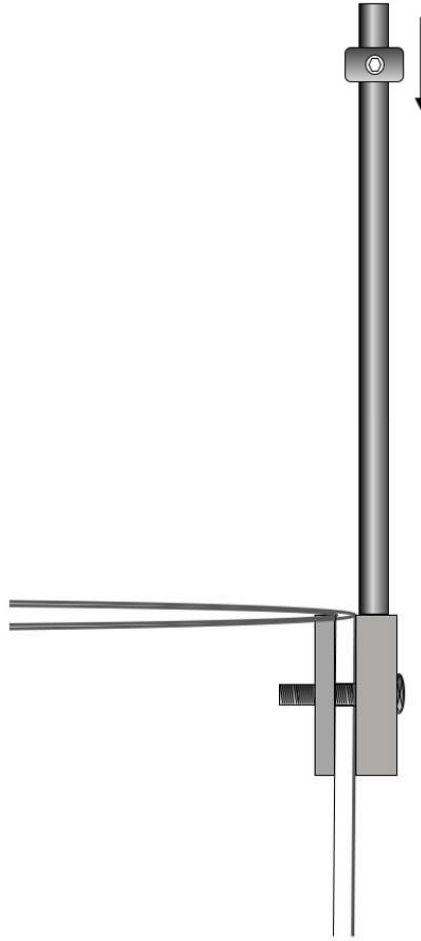
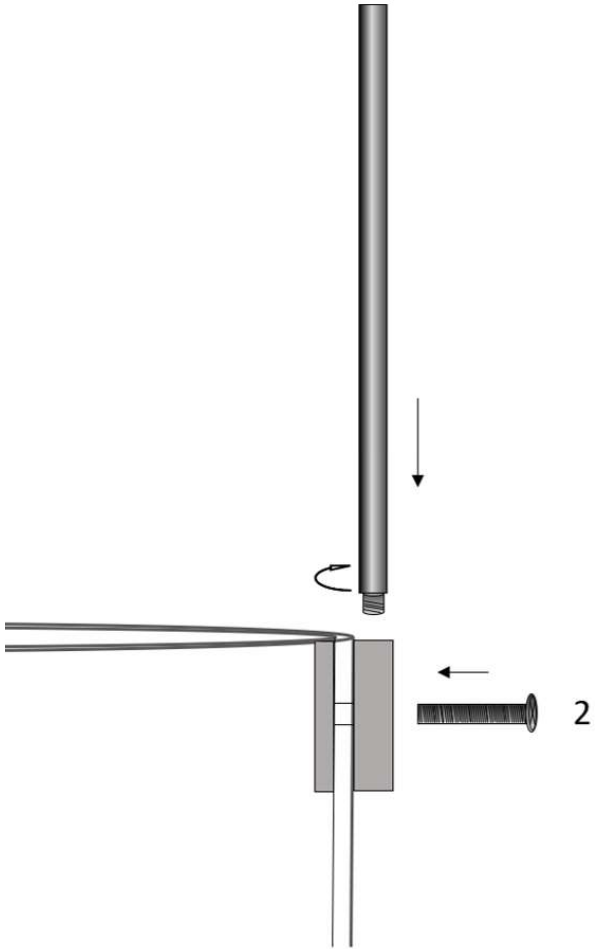


Dual Vial Holder

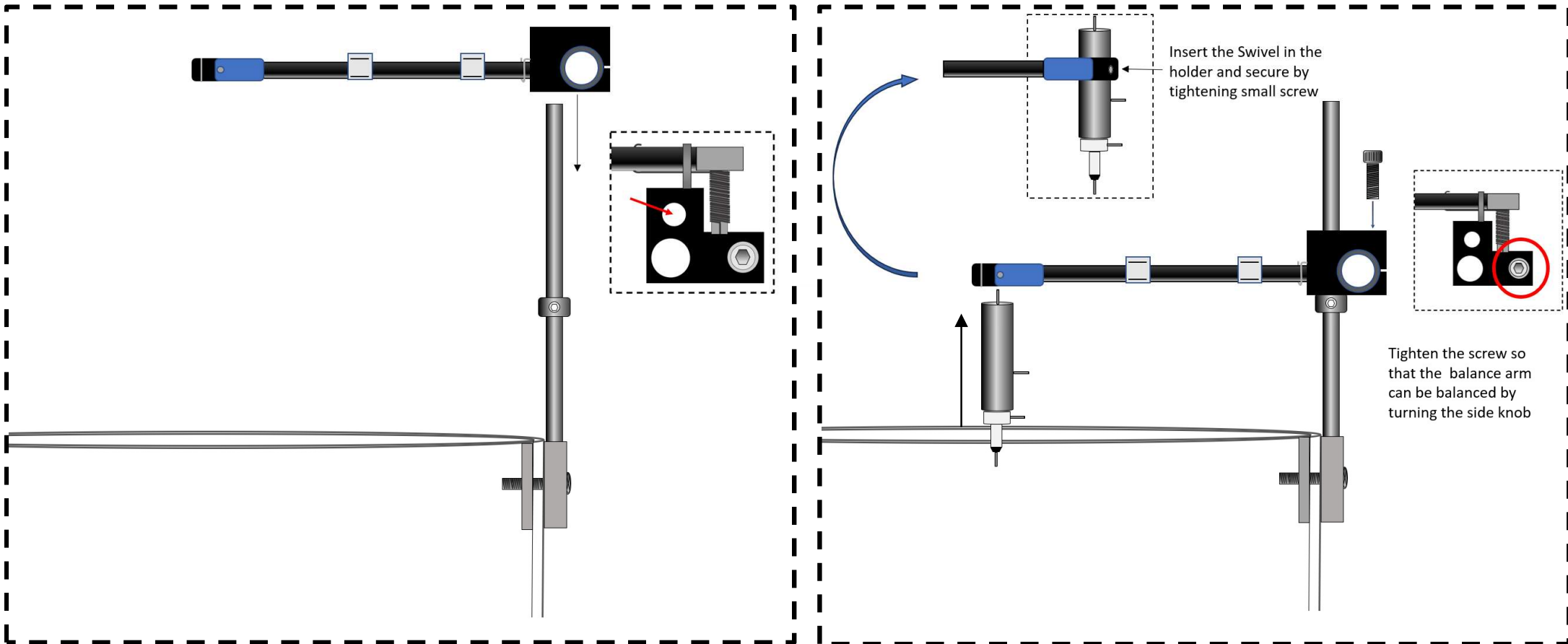


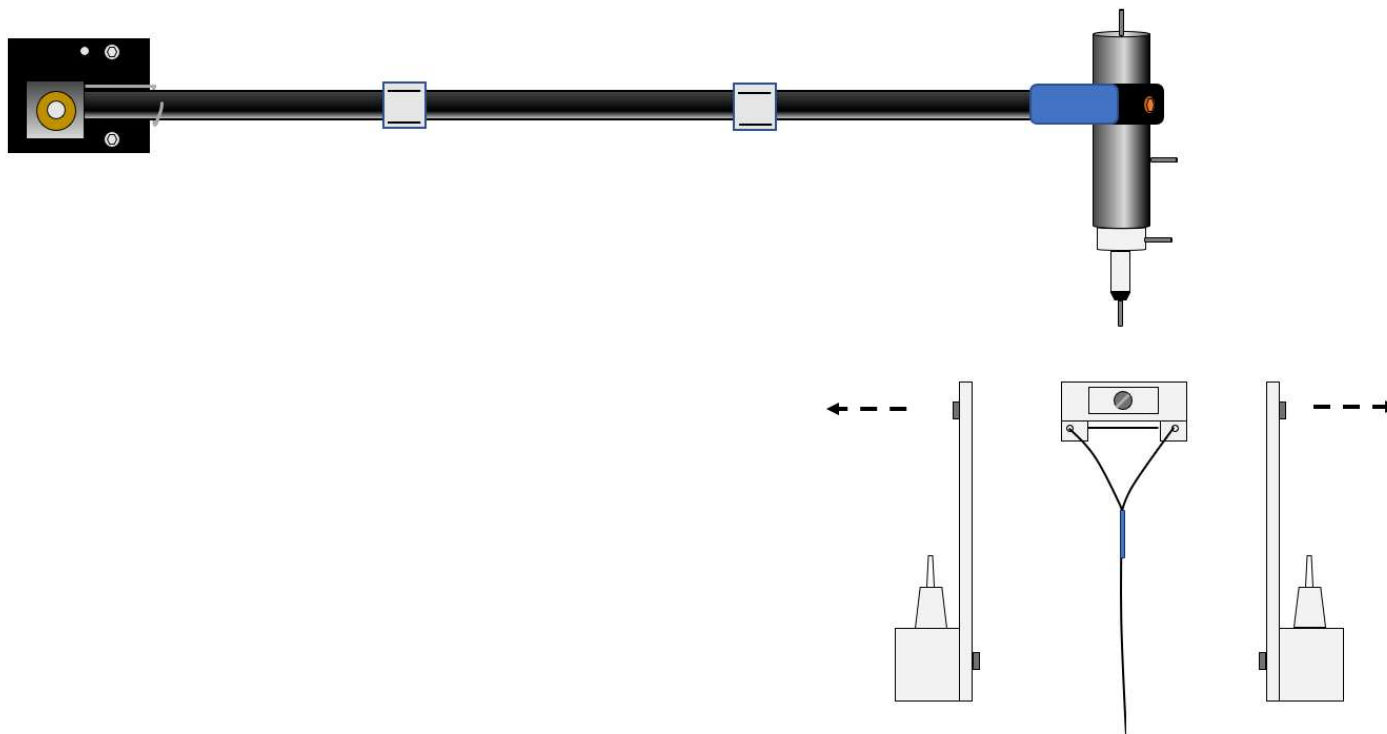
If more than 50 μ l is collected
turn the holder
Note: longer outlet tube is
needed

CMA 120 Swivel Assembly with Instech Balance Arm

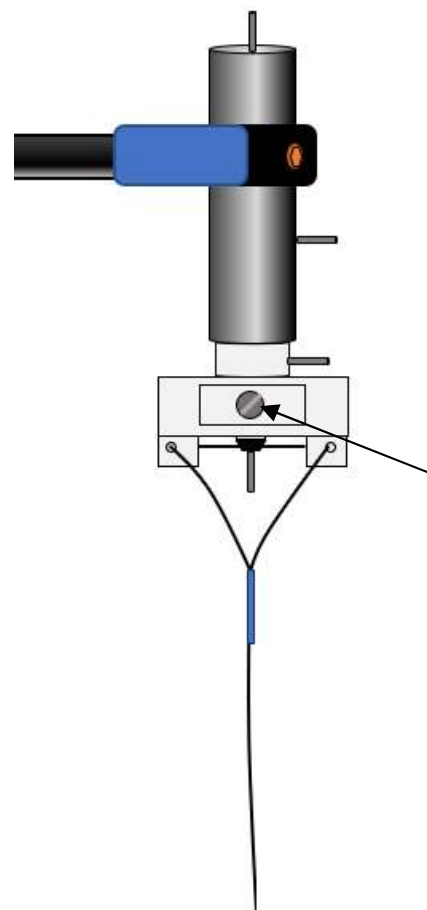
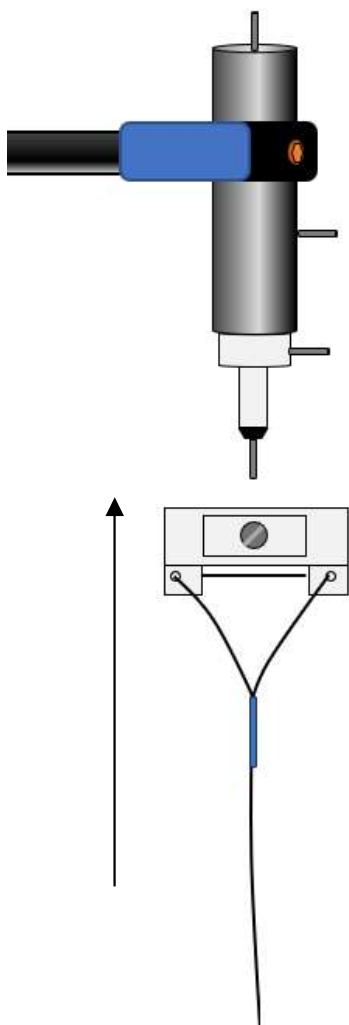


CMA 120 Swivel Assembly with Instech Balance Arm

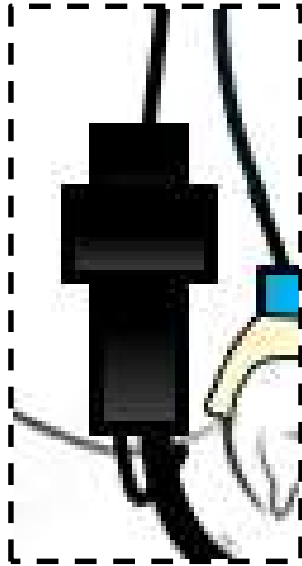




Remove the vial holders from
the Swivel Assembly



Secure the swivel assembly
by tightening the small
screw



Insertion of the probe into the guide

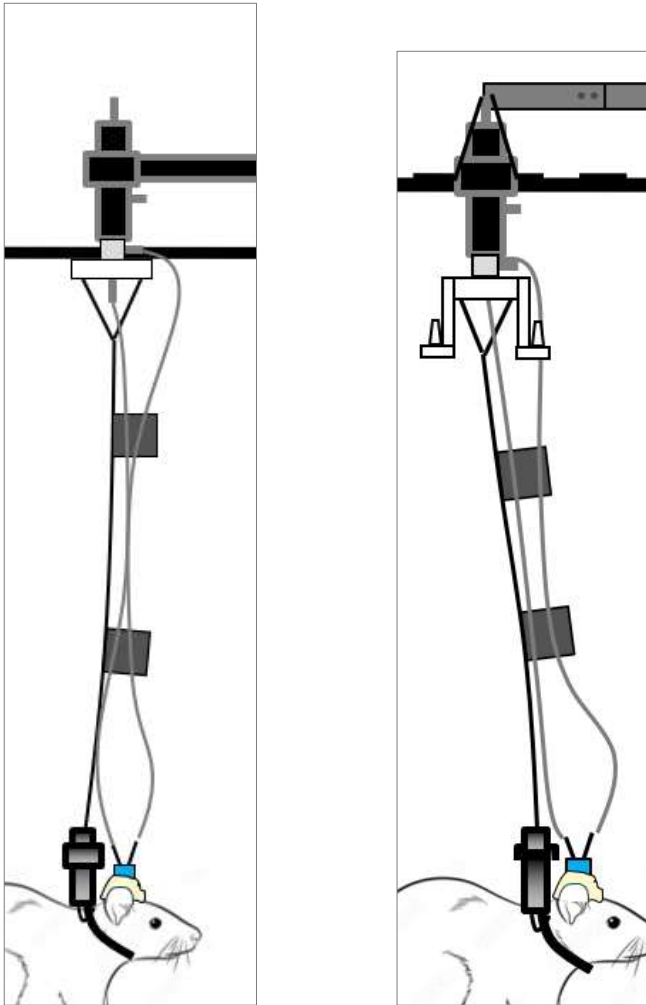
While holding the animal, attach the steel wire to the collar around the neck of the animal using the clip. The animal can be allowed to become used to the collar during the recovery period after surgery



Remove the dummy from the implanted Guide Cannula and insert the microdialysis probe while holding the animal firmly against your body. This requires some practice as the probe can easily be damaged if the animal moves its head during insertion. The CMA 11 and the CMA 12 Microdialysis Probe are automatically secured when gently pressing it down into the Guide Cannula.



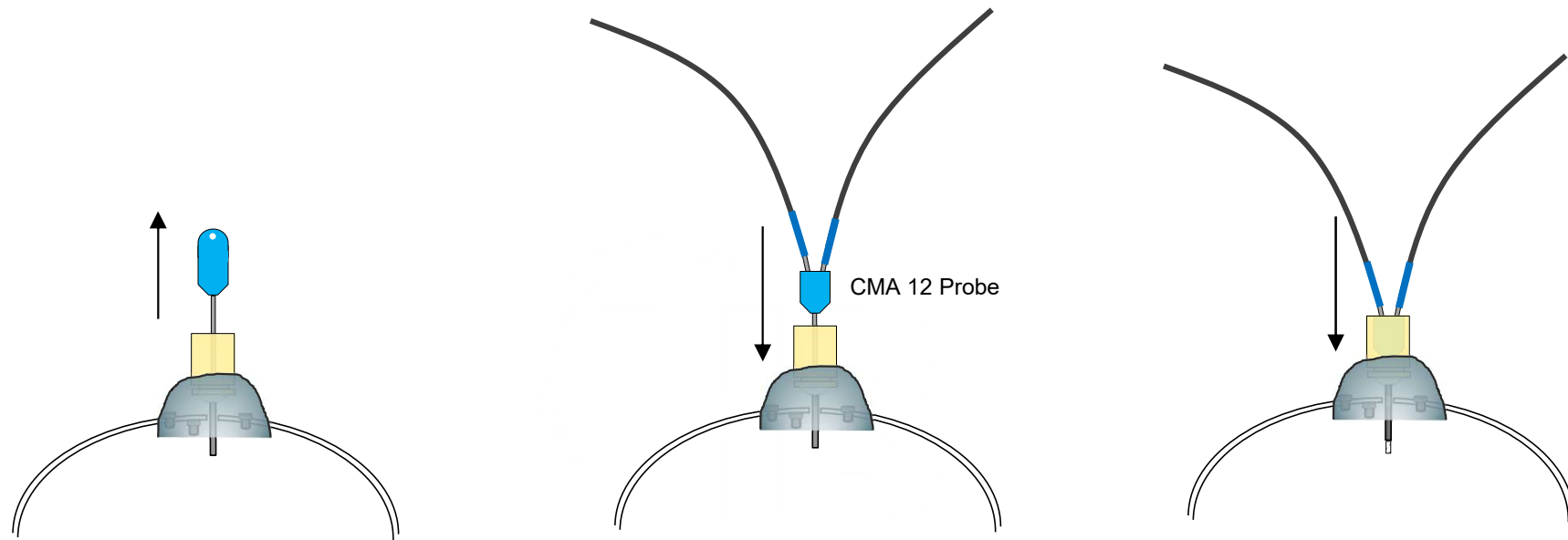
<https://microdialysis.com/products/instruments/cma-120-system-for-freely-moving-animals.html>



Place the animal in the Bowl-Cage. Make sure that the animal has enough free tubing to move its head in all directions, before taping the inlet and outlet tubing to the “flag” on the steel wire.

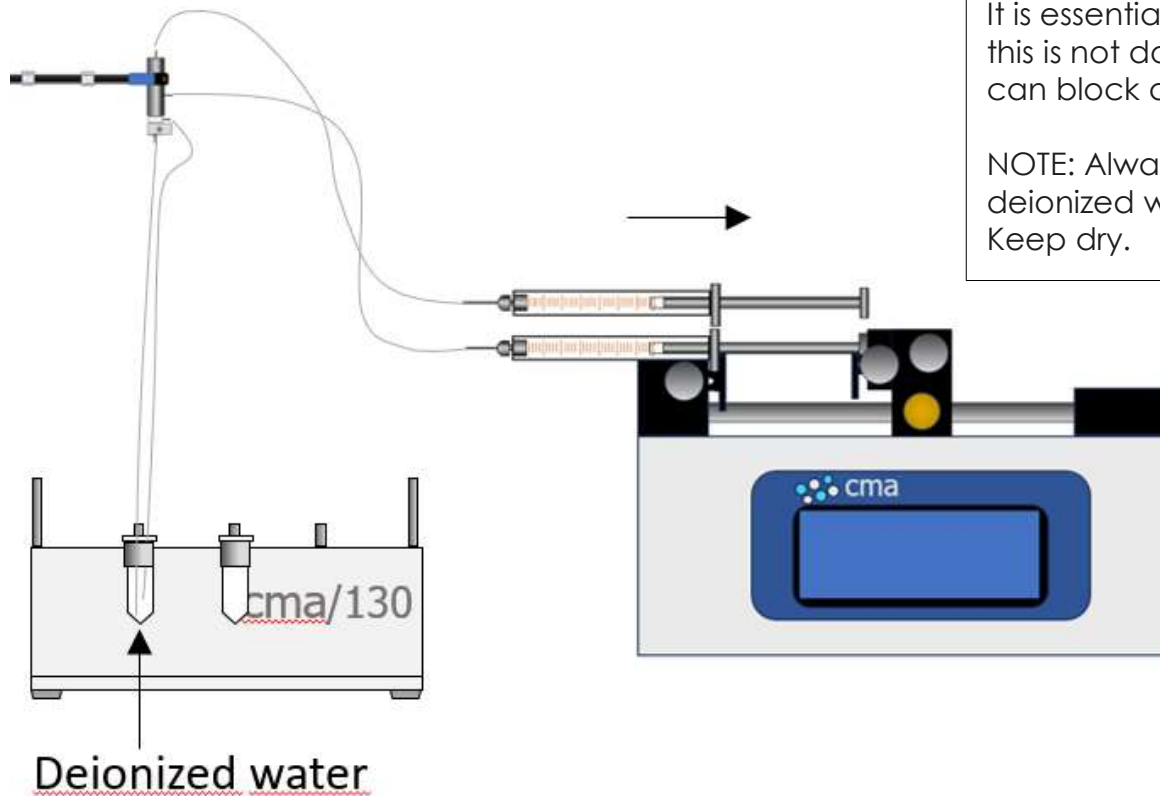
<https://microdialysis.com/products/instruments/cma-120-system-for-freely-moving-animals.html>

Insertion of the probe into the guide



Remove the dummy from the guide and fully insert the probe into the guide so the membrane is exposed in the tissue.

Cleaning the Dual Channel Swivel



It is essential that the channels of the swivel are cleaned after use. If this is not done, salt crystals from the perfusion fluid may form, which can block and seriously damage the channels.

NOTE: Always clean the channels of the swivel after use by pulling deionized water through the swivel. Pull air through the channels. Keep dry.

After the experiment, remove the probe from the FEP tubings. Put the FEP tubing distal ends into a vial filled with deionized water. Load the pump with 2 empty syringes and attach to the Swivel with FEP tubings. Pull (aspirate) with 10 $\mu\text{l}/\text{min}$ for 30-60 minutes.

Re-using the probe

If re-using the probe. It is important to thoroughly clean the probes to prevent formation of salt deposits when attempting to reuse post-experiment. To prepare for storage, fill a syringe with deionized water and submerge the membrane in deionized water using the In Vitro Stand. Flush the probe at a flow rate of 10 $\mu\text{l}/\text{min}$ for 30-60 minutes. The probe can be stored wetted in deionized water using the In Vitro Stand. Alternatively, the probe can be stored dry in the In Vitro Stand by using a syringe in withdrawal mode to flush air through the swivel channel, tubing, and the probe.

Please note that probes are consumable and guaranteed by CMA for single use. Repeated use of the probes may decrease functionality. An In Vitro calibration test with standards can be implemented to assess performance prior to reuse.

Do not use alcohol for cleaning the probe!

