



VanoFlow[®]-EXO-20 EV Isolation Cassette Quick Guide

Doc Num: QG-VF-EXO-20 Rev A



Materials

Materials provided	Qty
VanoFlow-EXO-20 cassette	1
VanoFlow-EXO-20 Tubing set bag (First Use, 2x Reuse, Cleaning)	1
Sample collection bottle (100mL)	3
NFC tags (3x Purification + 3x Cleaning)	6
Part storage box	2

Materials Required but Not Provided (Each Run)	Qty
0.05M HCl (for storage)	40 mL
0.5M NaOH (for cleaning)	200 mL
PBS or TBS buffer	360 mL
70–75% Ethanol or Isopropyl alcohol	200 mL
DI water or distill water	200 mL
GL-45 bottles (Sample, Buffer, and Cleaning)	3
Zip lock bag (for tubing storage)	1

Software Requirement

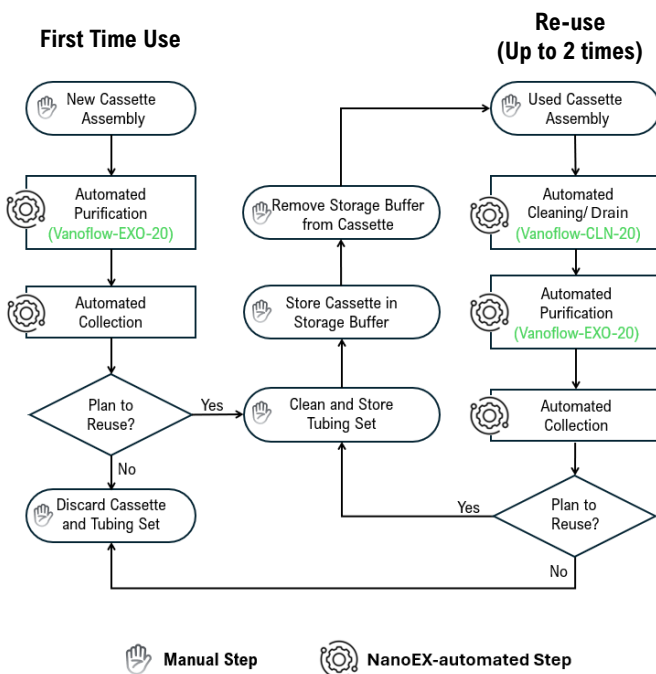
- Version **V3.5.4** or later for instrument with serial number (last 4 digit) \leq 0030
- Version **V5.5.4** or later for instrument with serial number (last 4 digit) \geq 0031
- Protocol Profile **V2.6.1** or later

Safety

WARNING: Sodium hydroxide (NaOH) and hydrochloric acid (HCl) solutions are **highly corrosive** and may cause **severe skin burns, eye damage, and respiratory irritation** if mishandled.

- Use appropriate Personal Protective Equipment (PPE)
- Dispose of waste according to local and government regulations.

Workflow Overview



First Time Use

Cassette Assembly

- Insert “**Purification**” tag (VF-EXO-20) into the rear slot of the **Tubing Adapter** and verify that the correct cassette name is displayed on the instrument screen.
- Install **Sample** and **Buffer Bottles** (not provided) and connect the associated tubing.
- Place **Cassette** and **Collection Bottle** (provided) onto the **Cassette Stand**.
- Press the **Waste Connector** thumb latch, insert the **Cassette Waste Tubing** into the connector, and place the waste container at the same level as the instrument.
- Connect all tubing as indicated by the **Red Circles** in Figure 1.
- Install the tubing onto the **pump heads**.

Reminder: When reusing a process tubing, confirm that the **tubing hub emptying** steps in Figure 6 are complete.

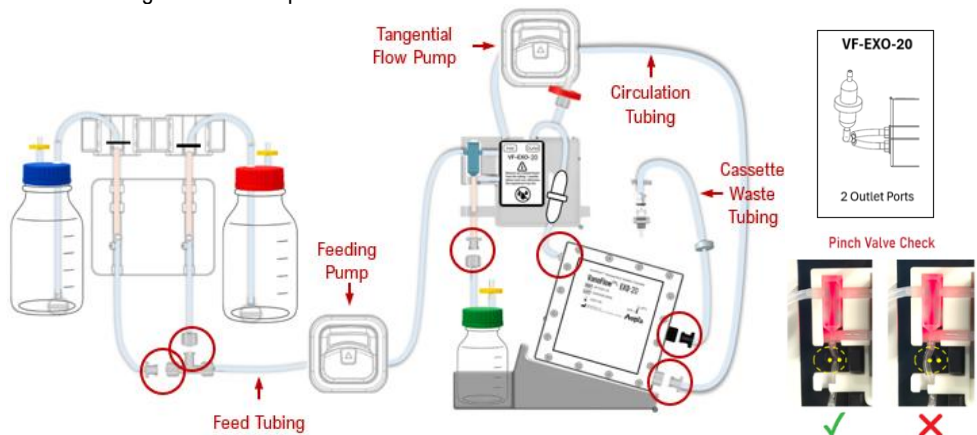



Figure 1 - Tubing connection diagram

Automated Processing


- On the **Home** screen, click **Set Up**, then select the processing mode. The “**Standard Mode**” is always recommended for most sample types.
- Follow the on-screen instructions to complete the required checkpoints. **Verify** that the pinch valve has **securely clamped** the tubing, as shown in Figure 1 (right).
- When prompted, input sample name and volume.
- Add **sample** and **buffer (360 mL)** to the corresponding bottles.
- On the main processing screen, press the () button to begin processing.

Reminder:

-The system performs automated pre-checks during the initial ~**12 minutes** before sample loading.

-Monitor the system during this period. After sample loading begins, the run typically proceeds without further user intervention.

Collection

- After processing is completed, click the “**OK**” button on the pop-up window to return to home screen.
- On the Home screen, click “**Collect**” and follow the on-screen instructions.
- Before starting collection, cap the **venting valve** with the provided **silicone cap**.
- On the main processing screen, press the () button to begin collection.

Post-processing Procedures

- After collection is completed, click the **“Release Cassette”** button (now activated).
- If planning to reuse the cassette, disconnect only the tubing indicated by **Red Circles** in Figure 2(left) and keep the other tubing connected.
- Using a **50mL syringe**, slowly inject **~40ml storage buffer** (0.05M HCl) into the cassette as shown in Figure 2(right). When the buffer reaches the Outlet Port, cap the **Outlet Ports** (x2) with silicone caps (x2).
- Continue injecting more storage buffer into the cassette until resistance is felt. Remove syringe and cap the **Inlet Port** with a Clear Luer Cap, then disconnect the waste tubing and cap the **Waste Port** with a Black Luer Cap. Store at 2-8°C for up to 4 weeks.
- Flush the **Waste Bottle Tubing** through the Waste Bottle Connector using the Rinsing Syringe (provided) with 20mL Distilled H₂O followed by 20ml 70%-75% Isopropyl alcohol or Ethanol and then push air through the tubing.

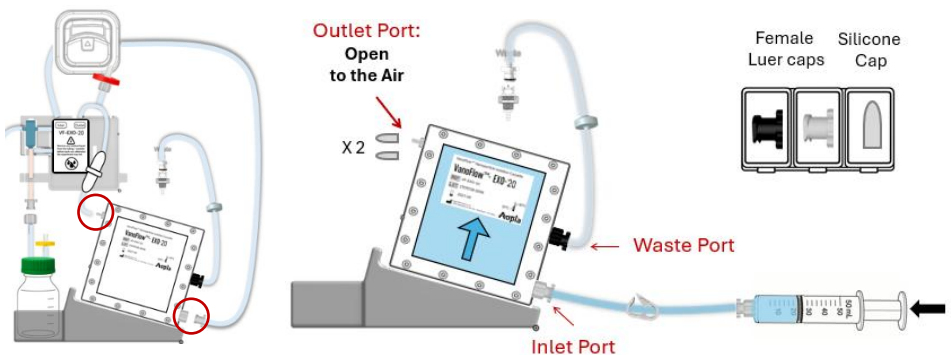


Figure 2 - Cassette storage for future use

- Discard the used **Sample Feed Cap Assembly (red cap)** and the **Venting Valve (red filter)**.
- Disassemble the remaining tubing set into individual components by disconnecting them as indicated by the **Red Circles** in Figure 3.

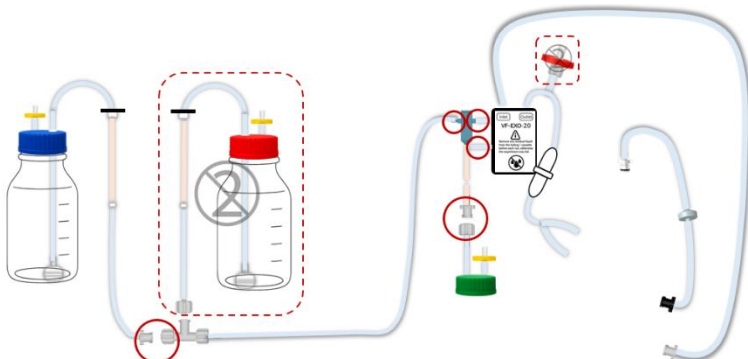


Figure 3 - Disassembling tubing for cleaning

Tubing Cleaning for Reuse

- **A. Standard Tubing (excluding Tubing Hub):** Flush each tubing with DI water, followed by 70–75% Ethanol (or IPA), and flush again with DI water. Purge with air to remove residual liquid.
- **B. Tubing Hub:** Clean the **Tubing Hub** (Cassette Inlet/Outlet Tubing Assembly) according to Figure 4.
 - Connect tubing ends with the **Barbed Connector** (provided) indicated by **Red Circle**.
 - Hold the tubing hub **vertically** and flush from the inlet side with DI water, follow by 70–75% Ethanol (or IPA), and flush again with DI water. Keep the tubing hub vertical and **draw air by pulling back the syringe plunger to empty**.
 - **IMPORTANT:** Do not push air through the tubing hub. Residual liquid may remain.
 - Remove the **Barbed Connector** and tilt the **Tubing Hub** to remove residual liquid.
- Air dry all the reusable components and store in a zip lock bag at 2–8°C until reused.

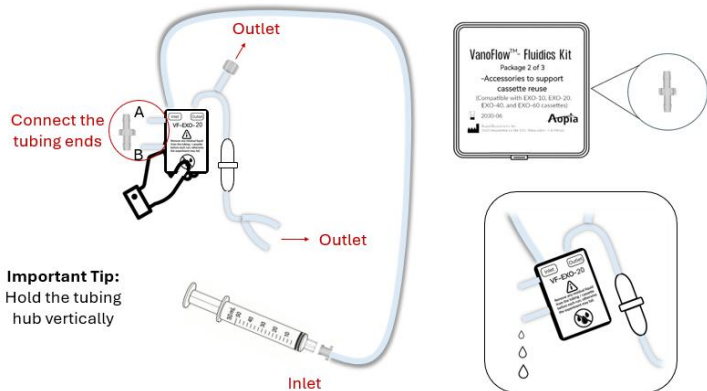


Figure 4 - Cassette inlet/outlet tubing assembly cleaning

Reusing a Cassette

Removing Cassette Storage Buffer

- Remove **All** the silicone caps (x2) from the cassette while keeping the Waste Port capped. Connect a syringe to the Inlet Port and draw the cassette storage buffer from the cassette, as shown in Figure 5.

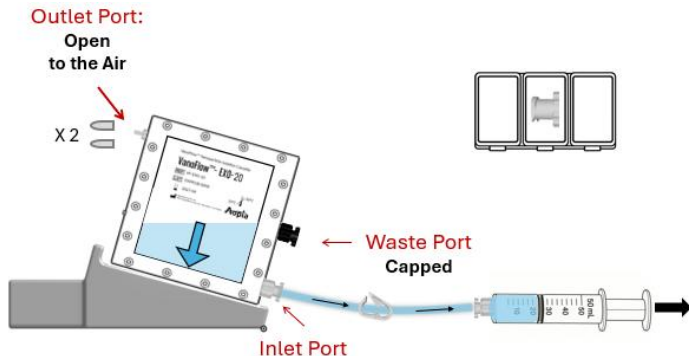


Figure 5 - Storage buffer removal

Emptying Tubing Hub

- Use the pump head to pinch (close) **the inlet tubing**.
IMPORTANT: This step is **required** before proceeding.
- Hold the tubing hub **vertically** during aspiration to facilitate complete liquid removal.
- Using a pipette with a **1 mL tip**, **fully insert the tip into tubing ends A and B to form a seal**, then aspirate any remaining liquid from tubing ends A and B **until no liquid can be withdrawn**, as shown in Figure 6.
- Replace the venting valve with a **new, venting valve**.

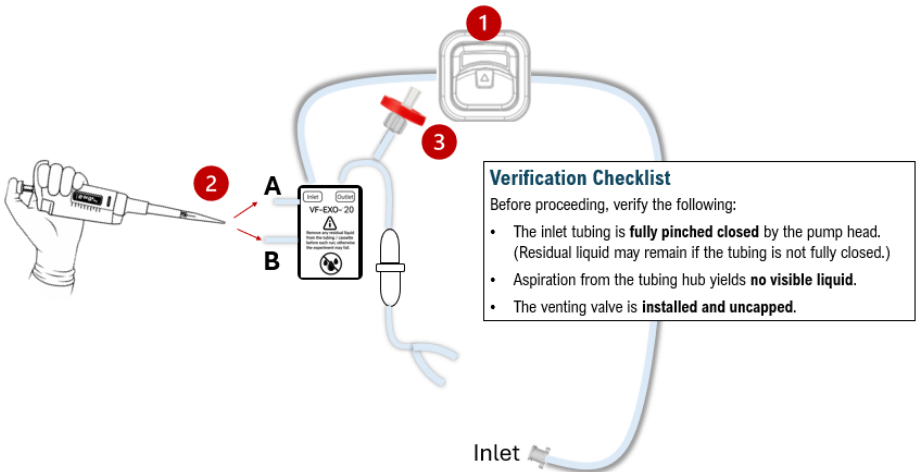


Figure 6 – Emptying tubing hub

Cassette Cleaning

- Assemble the reused cassette and tubing following the same procedure as **First Time Use -> Cassette Assembly**. However, use a “**Cleaning**” NFC Tag (**VF-CLN-20**) instead of “Purification” Tag (VF-EXO-20).
- Before automated cleaning, confirm that the **tubing hub emptying** steps in Figure 6 are complete.
- Ensure a new **Red Venting Valve** is installed in the process tubing (provided), as shown in Figure 7A.
- Connect the **Yellow Cap Cleaning Feed Cap Assembly** (provided) to a dedicated GL-45 cleaning bottle for NaOH (not provided), as shown in Figure 7B.
- Fill the bottles as follows:
 - 200mL** of 0.5M NaOH in the Cleaning Bottle (Right)
 - 360mL** of PBS or Tris buffer (Do not use non-buffering solution) in the Buffer Bottle (Left).
- Install the reusable 100mL **Cleaning Collection Bottle** (provided) onto the **Collection Cap Assembly** to collect the cleaning solution, as shown in Figure 7C.
- Select “**Cleaning Mode**” on the “Select Processing Mode” page. Follow screen instructions to perform automated NaOH clean.
IMPORTANT: After the cleaning process is completed, perform a Collection cycle.

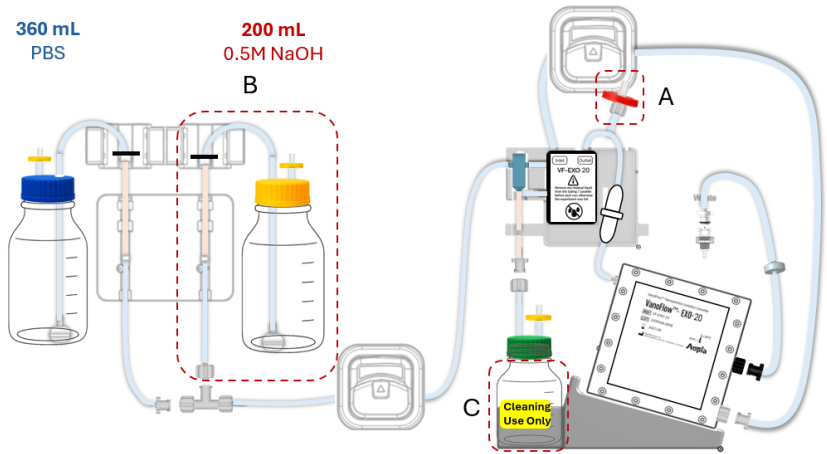


Figure 7 - Set up for automated NaOH cleaning

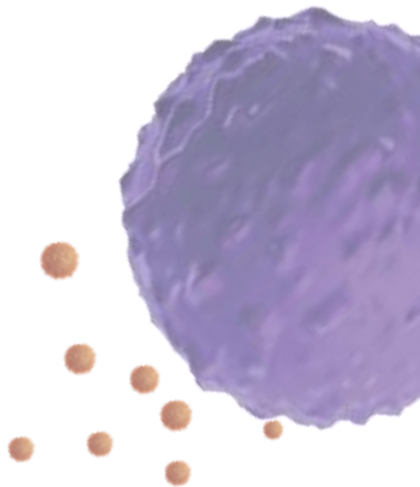
Sample Processing

- After the cleaning cycle is completed, perform purification by following the procedures in **First Time Use** → **Begin Processing**.
- Before beginning Processing, confirm that the **tubing hub emptying** steps in Figure 6 are complete.
- Ensure to use a new set of **Sample Feed (red) Cap Assembly, Red Venting Valve, and Collection Bottle with cap.**

Common Installation Errors and Consequences

Common Installation Error	Consequence
Failure to empty the Tubing Hub before each run, as described in Figure 6, " Emptying the Tubing Hub. "	The pre-test may fail, and sample loading may be incomplete or result in excessive elution volume.
Failure to replace the red venting valve with a new one before each run.	
Tubing is not properly positioned between the two pins of the pinch valve, resulting in incomplete pinching.	The processing will fail
Failure to cap the venting valve during collection.	Incomplete sample collection

For the complete User Manual, scan the QR code below.



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