



# Labscale™ Tangential Flow Filtration System

User Guide

## Notice

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# Introduction

The Labscale TFF system is a simple, easy to use system, designed specifically for the Pellicon® XL device. This modular system includes a 500 mL acrylic reservoir with pressure gauges, device docking manifold and retentate valve; system base with integral magnetic stirrer and diaphragm pump. The design of this system allows Millipore's Pellicon XL device to dock directly onto the side of the reservoir, making tubing connections short, minimizing holdup and recirculation volumes.

## Operator and Equipment Safety

Anyone operating or working near the Labscale system must be aware of the following:



- Read and understand this Operators Manual before performing maintenance on the system. Failure to follow instructions could result in user injury or system damage.
- Read and understand all maintenance instructions in this operating instruction manual before performing maintenance on the system. Failure to follow instructions could result in user injury or system damage.
- Prior to operation, ensure the Labscale system is fully assembled as described in Labscale TFF System Setup. Ensure all pumps and sensors are properly connected to their connection ports on the system.
- Never operate the Labscale system in a hazardous environment or use with flammable, combustible or solvent liquids.
- Any alteration of the Labscale system from factory specification may cause unsafe conditions and will void the product warranty.
- Use appropriate power supply cable and fuses for the area where the Labscale system is operated for information, see Labscale Stirbase Setup.

## Labscale Stirbase Setup

- If you order the pump module separately, ensure pump module wiring connections are correctly installed, see Chapter “Labscale Pump Module set up”.

## Module set up

### Risk of electric shocks



- Unplug power cord prior to opening the blank panel from system base.
- There are no user-serviceable parts inside the Labscale system.
- Service should be performed only by trained and authorized personnel.

### Risk of rupture

- Use caution when opening and closing valves. Failure to open or close valves at the appropriate times could result in trapped high pressure, product loss, damaged cassettes, chemical spills, and pump damage. Carefully follow all operating instructions
- Prior to each use, carefully inspect all hoses and tubing for kinks or restrictions that could result in pressure buildup and possible rupture of hoses or tubing.
- Prior to each use, carefully check that tubing at pump outlet to feed in port (FEED IN) and cleaning tubing are Sta-Pure (white) tubing. Failure in correctly installing Sta-Pure (white) tubing can result in overpressurized tubing and burst.
- Transfer pump tubing can rupture due to continuous contact with moving parts. Follow tubing manufacturer’s recommended replacement interval.
- Never move the system while there is liquid in the tank, while system processes are running or the cassettes is in place.



- Never operate the system without the tank cover in place. Never operate the system if any moving parts are exposed. Never operate the system with the pump housing open.
- Use appropriate personal protective equipment, including eye protection, when operating the system.



This equipment can potentially be used with biohazardous products.

## Operating Requirements

The system needs to be connected to electrical power and have fuses installed to operate.

The Labscale system must only be used with the Millipore wall transformer provided and Millipore accessories.

Location	Power Supply	Reference
North America Japan	115 VAC 50/60Hz, 1-phase	XX42LSS11
Europe, China	230 VAC 50/60Hz, 1-phase	XX42LSS12
United Kingdom	230 VAC 50/60Hz, 1-phase	XX42LSS13

### Operating Conditions

The maximum operating altitude	2000 m
The over voltage category	2
The temperature operating range	40 to 25 °C (39 to 77 °F) in a non-condensing environment

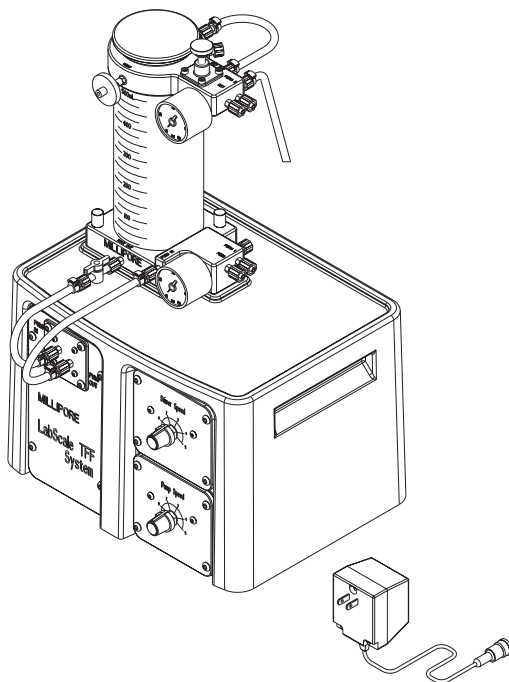
### Storage Conditions

The temperature storage range	-10 C to 55 °C (14 to 131 °F) in a non-condensing environment
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# System Overview/Unpacking Lists

## LabScale TFF System

The LabScale TFF System is shipped in an overpack carton that contains three separate cartons. One carton contains the LabScale 500 mL Reservoir, one contains the LabScale Stir Base with the LabScale pump module installed, one contains the AC Adapter.



*Figure 1: The LabScale TFF System, Catalog No. XX42LSS11(115V), XX42LSS12(230V), XXL425513(230V GB).*



## Labscale 500 mL Reservoir

The reservoir manifold and instruments are an integrated system. The feed pressure gauge indicates the pressure of the fluid being pumped into the Pellicon XL device. The retentate pressure gauge indicates the pressure of the fluid exiting the Pellicon XL device. The upper manifold includes a retentate back pressure valve. The fittings used are polypropylene and stainless steel.

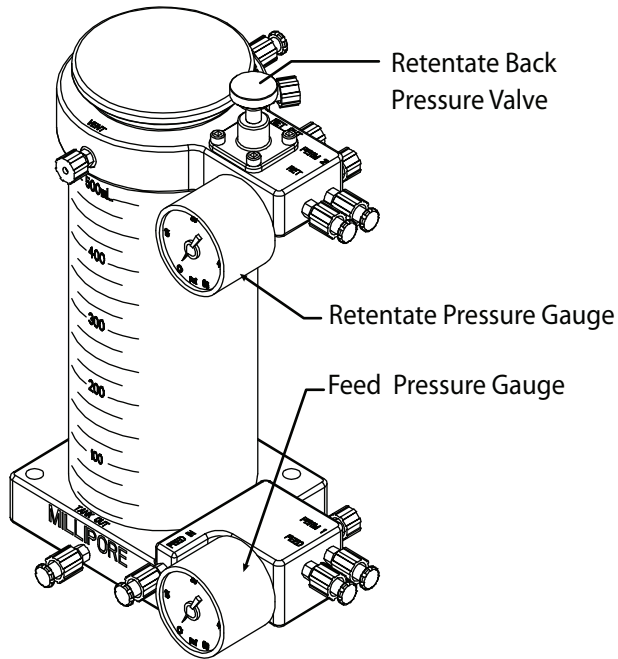


Figure 2: Labscale 500 mL Reservoir, Catalog No. XX42RES01

The following items are also packed with your Labscale 500 mL Reservoir:

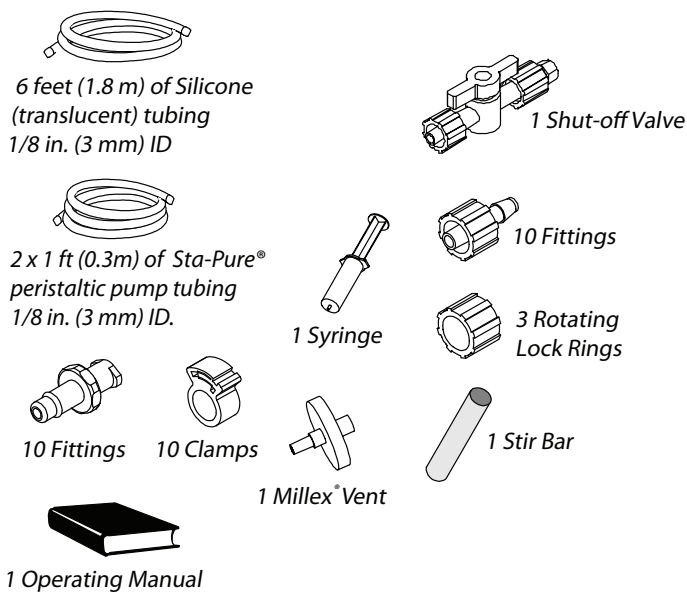
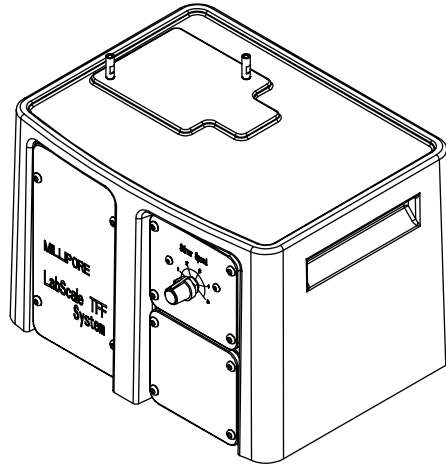


Figure 3: Labscale 500 mL Reservoir Accessories

## Labscale Stir Base

A magnetic stirrer is installed inside the base housing. A stir bar is packed with the Labscale Stir Base unit. The speed control knob for the stirrer is located on the front of the stir base.



1 Stir Bar



2 Thumb screws



1 Operating Manual

Figure 4b: Labscale Stir Base Accessories

Figure 4: Labscale Stir Base Assembly No. 29755

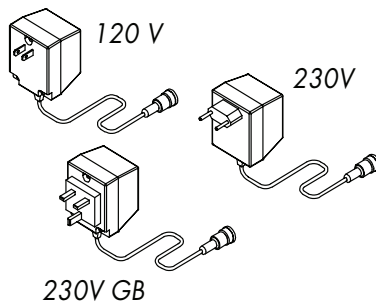


Figure 4c: AC Adapter Assembly No. 29209, (120V), 29781 (230V), 29913 (230V GB)

## Labscale Pump Module

The Labscale Pump Module consists of a panel mounted electronic diaphragm pump and a panel mounted speed controller that can be installed in the Labscale Stir Base. The Labscale Pump Module is mounted inside the base if a complete system was purchased. If the pump unit was purchased separately, it is packed as shown in figure 5.

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Note: This Labscale Pump Module can only be used with the Millipore Labscale Stir Base.

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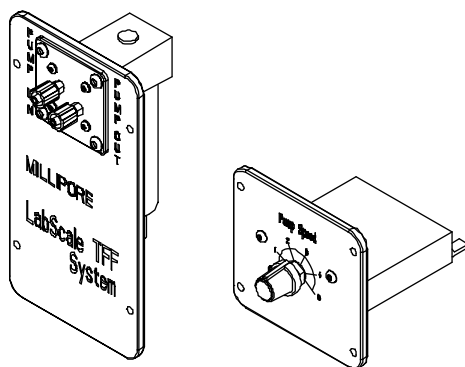


Figure 5: Labscale Pump Module Catalog No. XX42PMP01

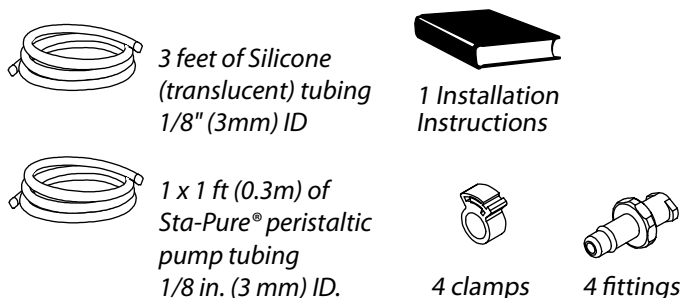


Figure 6: Labscale Pump Module Accessories

## Pellicon XL 50 Device

The Pellicon XL device is not included with the Labscale TFF System. It must be purchased separately. The Pellicon XL device includes an Accessories Kit that is packed in the Pellicon XL box below the device. The parts in the accessory kit are not required for this system installation.

## User Supplied Materials

You will need to supply the following items for system setup: suitable containers for retentate, permeate and waste collection, scissors, a Pellicon XL Device.

# Labscale TFF System Setup

See “Labscale 500mL Reservoir Setup” section for detailed setup instructions.

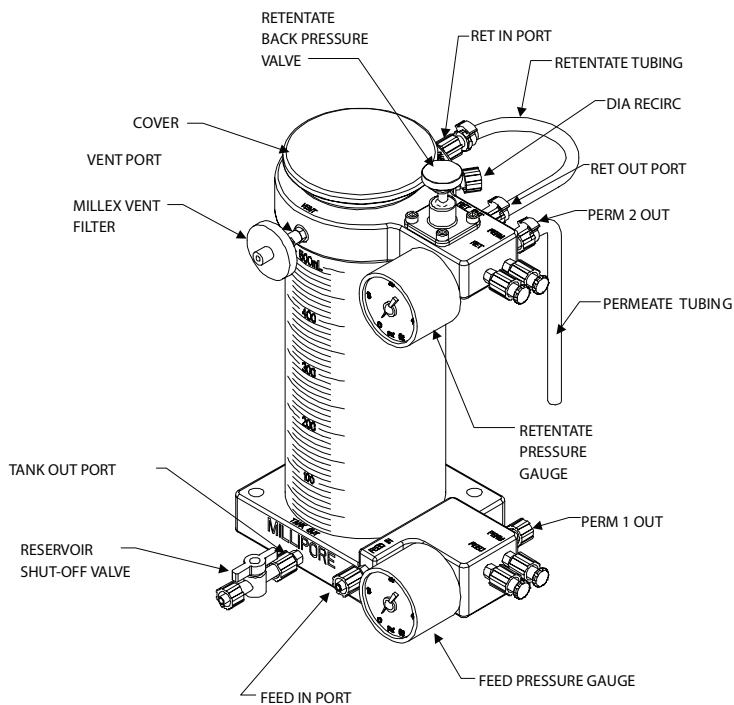
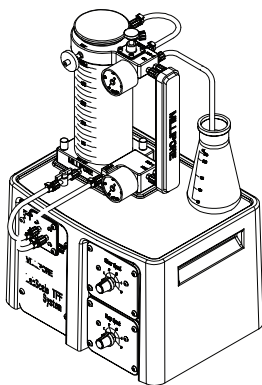
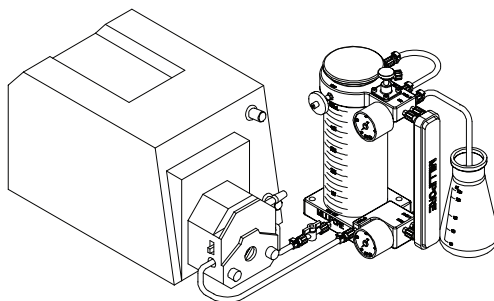


Figure 7: Labscale 500 mL Reservoir set up.



*Figure 8: Labscale 500 mL Reservoir set up with Labscale TFF System.*



*Figure 9: Labscale 500 mL Reservoir set up with user supplied peristaltic pump.*

Install the Sta-Pure (white) tubing on the pump outlet and feed in port of the reservoir.

## Labscale 500 mL Reservoir Setup

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Note: All tubing lengths are recommended to minimize recirculation volume. Longer lengths may be used.

After prolonged storage, the tubing may absorb a small volume of water. As a result, the tubing color may change from translucent to opaque, which is normal. Air or oven drying will return the color to translucent.

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### Install Retentate Tubing

1. Cut silicone (translucent) tubing and install fittings as shown in figure 10.

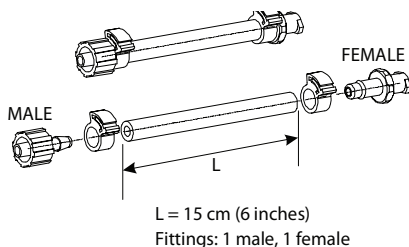


Figure 10: Set-up of retentate tubing, fittings and clamps.

2. Remove plugs from retentate outlet (RET OUT) and retentate inlet (RET IN) ports.
3. Insert the male luer end of the retentate tubing into the RET OUT port and the female luer end of the retentate tubing into the RET IN port. Turn fittings until snug.



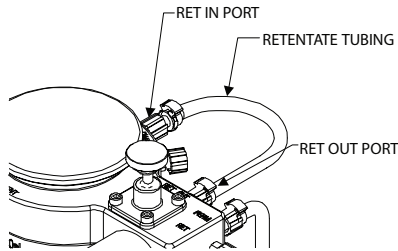


Figure 11: Install retentate tubing.

### Install Permeate Tubing

1. Cut silicone (translucent) tubing and install fittings as shown in figure 12.

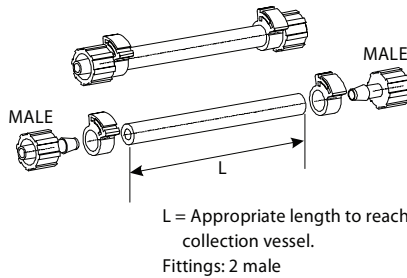


Figure 12: Set-up of permeate tubing, fittings and clamps.

2. Remove the plug from the permeate outlet port (PERM 2) and insert the male luer end of the permeate silicone (translucent) tubing into the PERM 2 port. Turn fitting until snug.

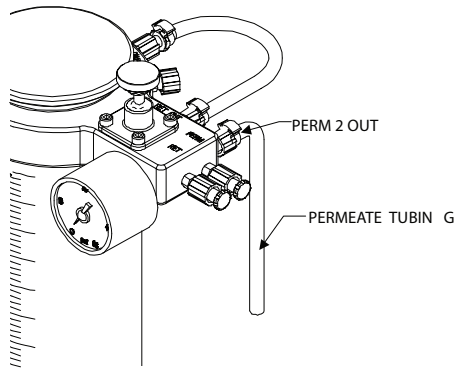


Figure 13: Install permeate tubing.

### Install Tank Outlet Valve

Remove plug from the tank outlet port (TANK OUT) and insert the female luer end of the tank outlet valve over the TANK OUT port. Turn the lock nut until snug.

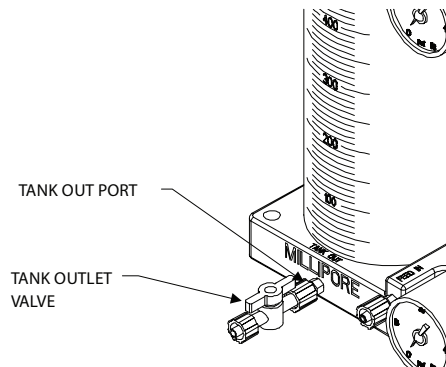


Figure 14: Install tank outlet valve.

### Install Vent Filter

If a sterile vent is required, remove plug from the vent (VENT) port and insert male luer end of MILLEX filter into the VENT port.

## Install Stir Bar

If mixing is required, open reservoir cover and drop stir bar to the bottom of the reservoir.

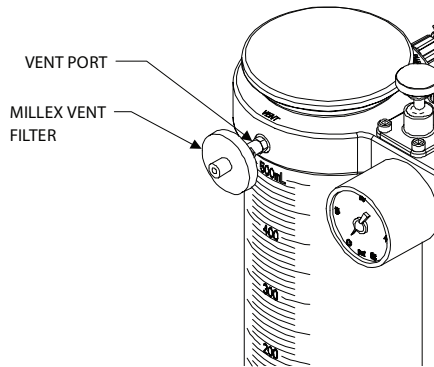


Figure 15: Install Millex vent.

## Labscale Stir Base Set Up

### Power Connection

1. Turn stirrer and pump (if equipped) speed controls to the off position.
2. Connect power cord to power cord receptacle located at the rear of the system base.
3. Align detent on connector with receptacle.
4. Press connector into receptacle and turn lock ring to secure.
5. Inspect transformer label, checking for proper voltage. The wall transformer serves as a means of cutting the power to the system.

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Note: The system should not be located in a place that may allow liquid to be splashed under the enclosure.

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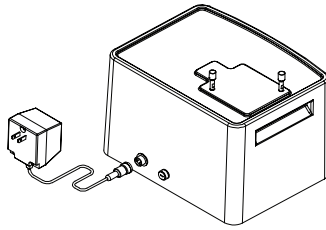


Figure 16: over Connection

### Check Operation

1. Remove the plugs from the pump inlet and pump outlet ports.
2. Turn on the pump speed control, set to 2, and listen for pump motor.
3. Turn off the pump speed control.
4. Turn on the stirrer speed control, listen for the stirrer motor.
5. Turn off the stirrer speed control.

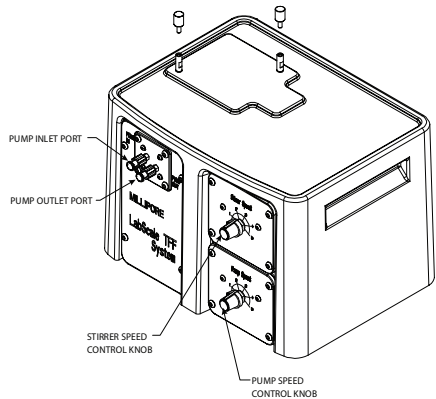


Figure 17: Check operation.

## Labscale Pump Module Set Up

### Labscale Pump Module Installation

If you ordered the Labscale Pump Module separately, you will need to install it in the Labscale Stir Base.

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**WARNING:** Disconnect power connection before proceeding.

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1. Remove the blank panels from the system base as shown in figure 18.
2. Install gasket and make wiring connections as shown in figure 19.
3. Secure the pump panel and pump speed control panel into the base as shown in figure 20.

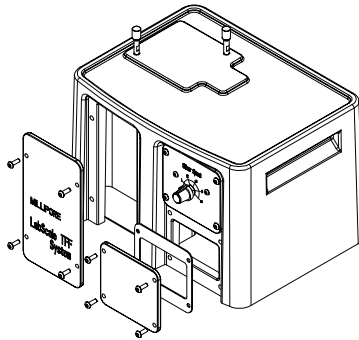


Figure 18: Remove blank panels from system base.

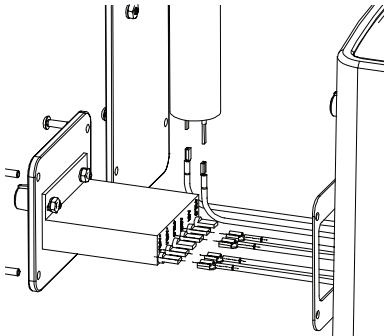


Figure 19: Labscale Pump Module wiring connections

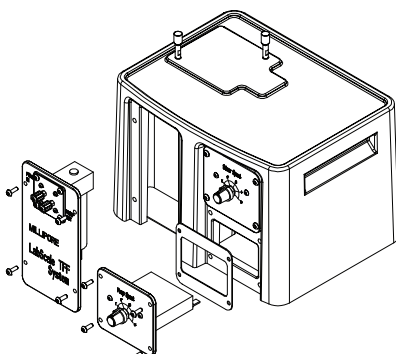


Figure 20: Labscale Pump Module installation

Speed Control		
Connector	WIRE	
	Number	Color
+ FIELD	not used	
AC1	1	Black
AC2	2	White
-FIELD	not used	
-ARM	6	Black
+ ARM	5	Red
Pump Control		
+	5	Red
-	6	Black

After prolonged storage, the tubing may absorb a small volume of water. As a result, the tubing color may change from translucent to opaque, which is normal. Air or oven drying will return the color to translucent.

1. Cut silicone (translucent) tubing and install fittings and clamps.

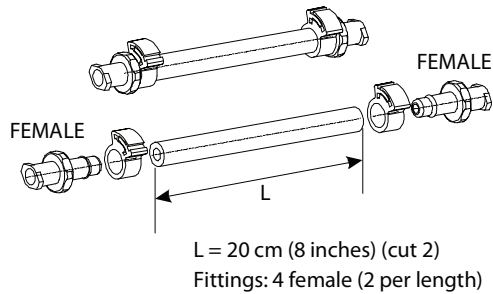


Figure 21: Set-up of pump inlet and outlet tubing, fittings and clamps.

2. Cut one of the two Sta-Pure (white) tubing and install fittings and clamps as shown in figure 21. Use only one Sta-Pure (white) tubing for pump outlet. The other Sta-Pure (white) tubing is used for cleaning.

### Install Pump Inlet and Outlet Tubing

1. Insert one female luer end of the silicone (translucent) tubing over the PUMP INLET port and the other female luer end of the silicone (translucent) tubing over the Tank Outlet Valve and turn the lock nut until snug.
2. Insert one female luer end of the Sta-pure (white) tubing over the PUMP OUTLET port and insert the other female luer end of the Sta-pure (white) tubing over the Feed Inlet (FEED IN) port and turn the lock nut until snug.

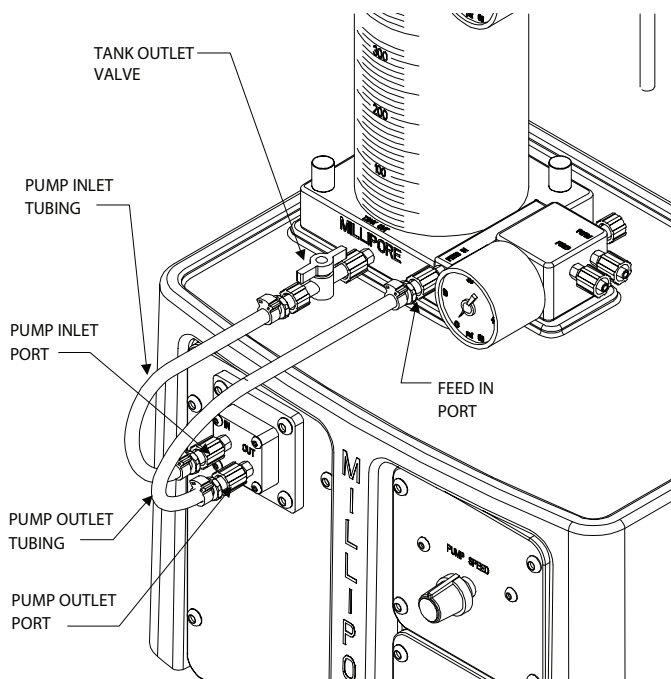


Figure 22: Install pump inlet and outlet tubing.

#### INSTALLATION TIP:

To reduce pump pulsation, increase tubing length.  
100mm (4 in) of additional tubing will only increase  
fill volume by 0.8 mL.

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Note: Failure to place Sta-Pure (white) tubing at the pump  
outlet may result in overpressurized tubing and bursting  
of tubing.

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# Install Cleaning Tubing

## Install Cleaning Tubing

1. Cut Sta-Pure (white) tubing and install fittings and clamps as shown in figure 23.

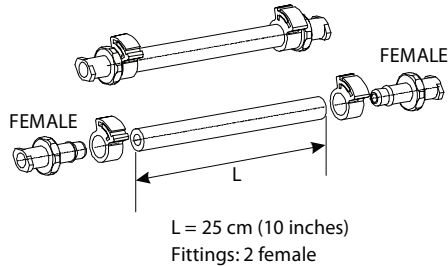


Figure 23: Setup of cleaning tubing, fittings and clamps.

Remove the plug from the Device Feed port (FEED) and insert one of the female luer ends of the cleaning tubing over the FEED port. Turn the lock nut until snug.

2. Remove the plug from the Device Retentate port (RET) and insert the other female luer end of the cleaning Sta-Pure (white) tubing over the (RET) port. Turn the lock nut until snug.

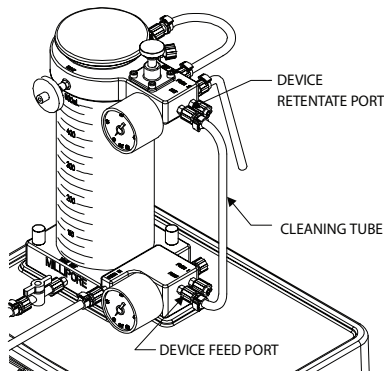



Figure 24: Install cleaning tubing.

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Note: Failure to place Sta-Pure (white) tubing at the pump outlet can result in overpressurized tubing and bursting of tubing.

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## Clean System

1. Disconnect retentate silicone (translucent) tubing from RET IN port and place in waste collection vessel.
2. Open retentate valve by turning counterclockwise .

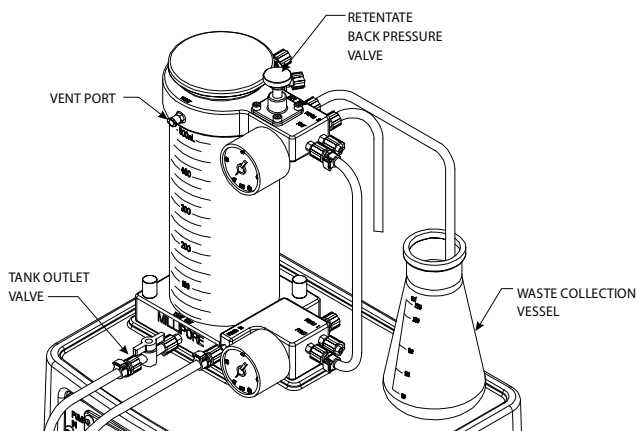


Figure 25: System Cleaning steps 1–6

3. Remove reservoir cover and fill reservoir with 500 mL of 0.1N Sodium Hydroxide at 45 °C.

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Note: Follow solution manufacturer's directions for proper handling.

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4. Remove plug from VENT port and open tank outlet valve.
5. Turn pump on - set pump speed to 2.

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Note: Check system connections for leaks—tighten connections if required

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6. Continue pumping the cleaning solution to the waste collection vessel until the level in the reservoir drops to 250 mL. Turn pump off.
7. Reconnect the retentate silicone (translucent) tubing to the RET IN port. Turn pump on and set pump speed to 2.

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Note: Check system connections for leaks—tighten connections if required

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8. Set pump speed to 2. Recirculate for 15–30 minutes. Turn pump off.

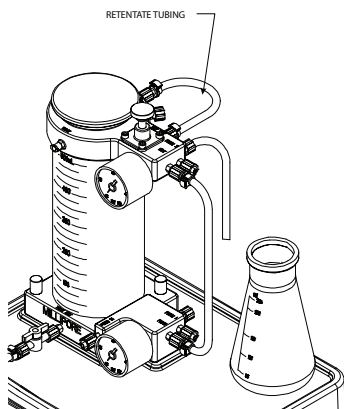


Figure 26: Setup for system cleaning steps 7 & 8

## Drain System

1. Disconnect pump outlet Sta-pure (white) tubing from pump outlet port and place in waste collection vessel.
2. Disconnect retentate silicone (translucent) tubing from RET IN port. Fluid should now drain by gravity. If additional drainage is required, a syringe can be placed on the end of the retentate tube and fluid can be blown down.

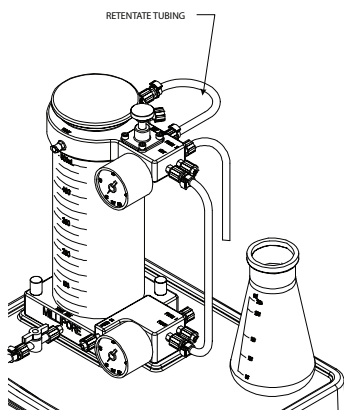


Figure 27: Setup for system draining steps 1 and 2.

3. Replace retentate silicone (translucent) tubing in retentate port. Reconnect pump outlet Sta-Pure (white) tubing.
4. Disconnect pump outlet Sta-Pure (white) tubing from FEED IN port and place in collection vessel. Open tank outlet valve, turn pump speed up to drain reservoir.
5. Reconnect the pump outlet Sta-Pure (white) tubing to the FEED IN port.

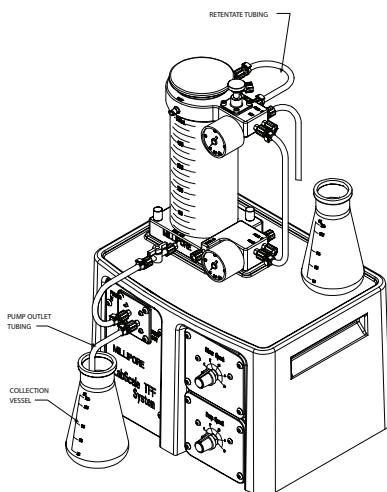


Figure 28: Setup for system draining steps 3–5.

## Flush System

Repeat instructions for System Cleaning substituting purified water in place of cleaning solution.

# Flushing Device

## Install Pellicon XL Device

1. Remove plug from FEED, RET, PERM 1, and PERM 2 ports.
2. Align Pellicon XL device ports with Labscale 500 mL Reservoir ports being sure that PERM and RET DEVICE ports of device and reservoir match. Press device firmly onto reservoir ports. Turn the lock nuts until snug.

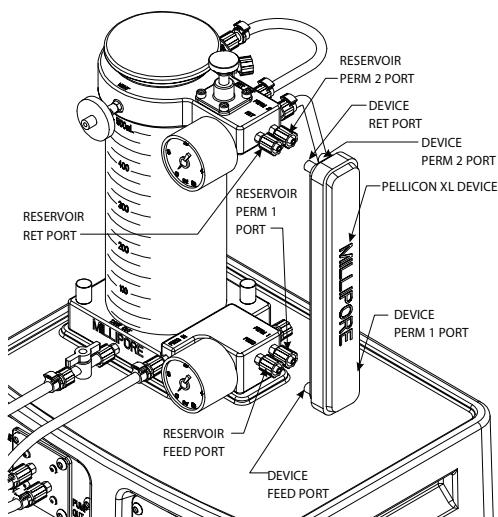



Figure 29: Install Pellicon XL Device

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Note: Be sure pump tubing is installed before proceeding and Sta-Pure (white) tubing is installed between pump outlet and feed in port (FEED IN).

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## Flushing

1. Disconnect retentate silicone (translucent) tubing from RET IN port and place end of retentate tubing in waste collection vessel.
2. Place end of permeate silicone (translucent) tubing into waste collection vessel. Open retentate valve—turn counterclockwise .
3. Remove reservoir cover and fill reservoir with 500 mL of purified water. Remove plug from VENT port and open tank outlet valve.

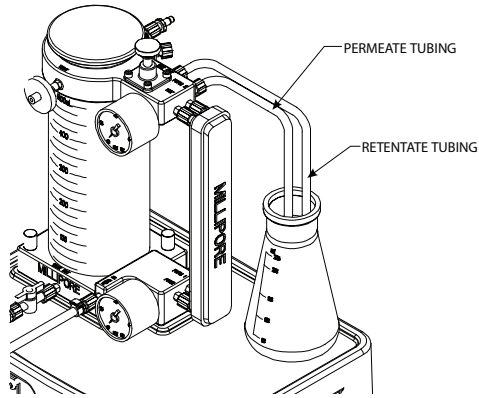


Figure 30: Flushing the Pellicon XL Device, steps 1–6.

4. Turn pump on - increase pump speed until feed pressure gauge reads 1.38 Bar (20 psi).

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Note: Check system connections for leaks—tighten connections if required

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5. Continue pumping to the waste collection vessel until level in the reservoir drops to 350 mL. Turn pump off.

6. Reconnect the retentate silicone (translucent) tubing to the RET IN port and turn pump on - increase pump speed until feed pressure gauge reads 1.38 Bar (20 psi).

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Note: Check system connections for leaks—tighten connections if required

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7. Adjust retentate valve restriction by slowly turning retentate valve clockwise  until the retentate pressure gage reads 0.69 Bar (10 psi).
8. Adjust pump speed and retentate valve restriction to achieve 2.07 Bar (30 psi) feed pressure and 0.69 Bar (10 psi) retentate pressure.

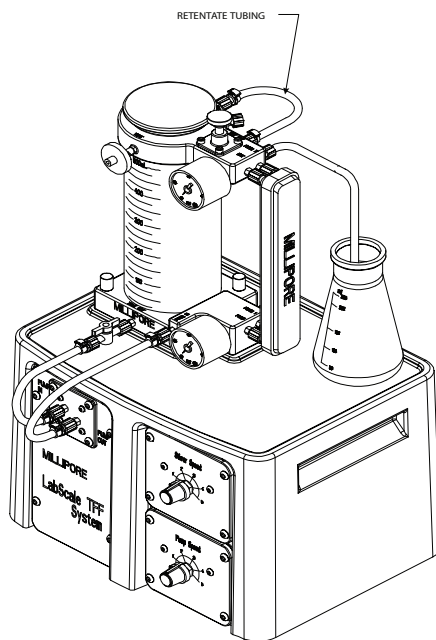


Figure 31: Flushing System Setup.

9. Continue flushing until the level in the reservoir drops to 50 mL. Turn pump off.



## Drain System

See “Drain System” section, page 27.

## Integrity Testing—Pellicon XL Device on System

### Integrity Test Set Up

1. Close tank outlet valve and disconnect pump inlet tubing (silicone, translucent) from the tank outlet valve. Close the retentate valve.

### Integrity Test Procedure

1. Obtain air integrity test pressure and airflow specifications from the Certificate of Quality supplied with the device.
2. Insert syringe in the female luer end of the pump inlet tubing (silicone, translucent). Inject air into the tubing until the feed pressure gauge reading reaches the recommended air integrity test pressure.

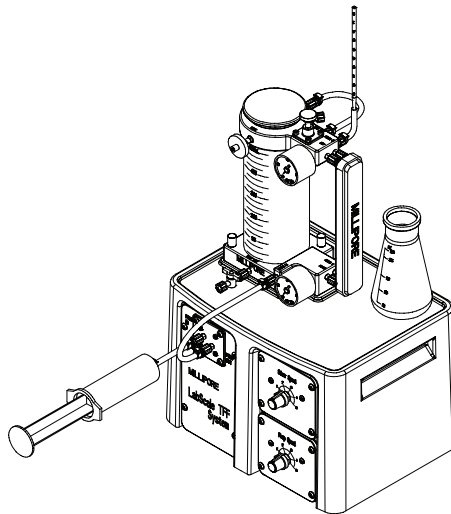


Figure 32: Integrity Test Setup

3. Add 0.1 mL of water to a 1 mL pipette. Insert bottom of pipette into the end of the permeate tubing (silicone, translucent).
4. Measure airflow by measuring the displacement of water in the pipette for 30 seconds. Multiply the displaced volume by 2 to calculate the airflow (mL/min) and record.
5. Remove the pipette from the permeate tubing (silicone, translucent). Open the retentate valve slowly to release the air pressure in the system.
6. Reconnect the pump inlet tubing (silicone, translucent) to the tank outlet valve.

The Pellicon XL device is integral if the measured airflow is less than or equal to the airflow specification on the Certificate of Quality.

## Preconditioning

1. Place end of permeate tubing silicone (translucent) in waste collection vessel.
2. Remove reservoir cover and fill reservoir with 50 mL of an appropriate buffer. Remove plug from VENT port.
3. Open tank outlet valve. Turn pump on - increase pump speed until feed pressure gauge reads 1.38 Bar (20 psi).

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Note: Check system connections for leaks—tighten connections if required

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4. Continue pumping to the waste collection vessel until the level in the reservoir drops to the bottom of the reservoir stir bar well. (Stop pump before air is pumped into the system.). Turn pump off.

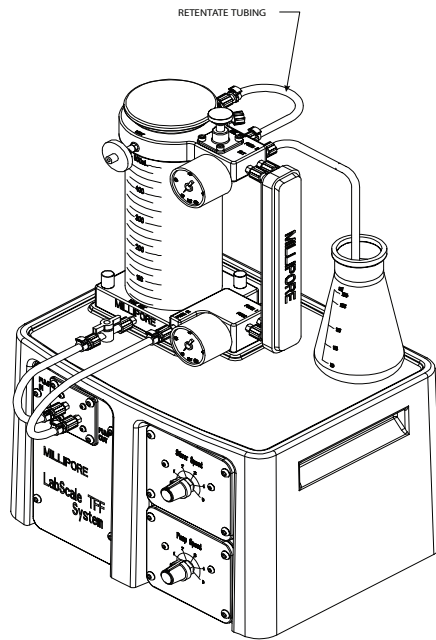


Figure 33: Preconditioning Setup.

### Drain Permeate Tubing

1. Disconnect the permeate tubing (silicone, translucent) from the permeate outlet (PERM 2) port. Drain permeate tubing into the waste collection vessel.
2. Reconnect the permeate tubing to the PERM 2 port.

### Concentration


1. Remove reservoir cover and fill reservoir with sample to be concentrated.
2. Ensure vent port is open by removing plug from VENT port and leaving open or install a Millex Filter. Open tank outlet valve.

3. Turn pump on—increase pump speed until feed pressure gauge reads 1.38 Bar (20 psi).

---

Note: Check system connections for leaks—tighten connections if required

---

4. Adjust retentate valve restriction by slowly turning retentate valve clockwise  until the retentate pressure gauge reads 0.69 Bar (10 psi).
5. Adjust pump speed and retentate valve restriction to achieve desired feed retentate pressures (recommend 2.07 Bar (30 psi) feed / 0.69 Bar (10 psi) retentate).

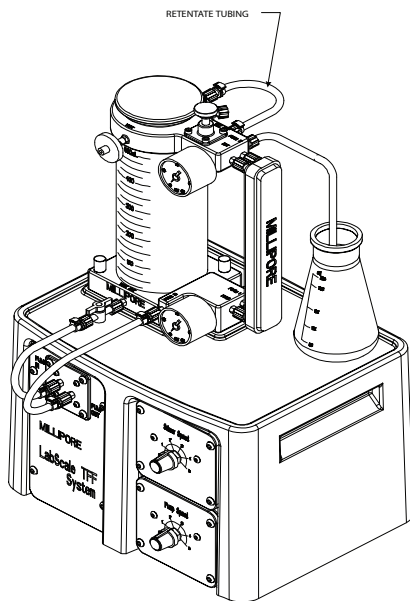


Figure 34: Concentration Setup.

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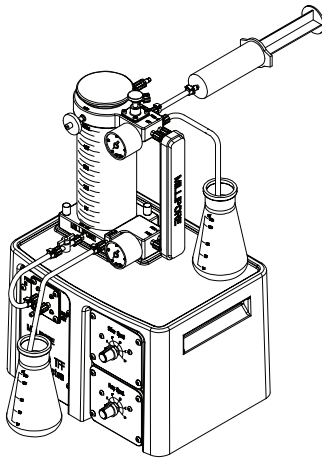
Note: Do not exceed 4.14 Bar (60 psi) feed pressure.

---

6. Continue processing until the desired concentration or volume is reached. Turn pump off.

## Product Recovery

1. Disconnect pump outlet tubing (Sta-Pure, white) from pump outlet port and place in product recovery collection vessel.
2. Disconnect retentate tubing (silicone, translucent) from retentate in port. Fluid should now drain by gravity. If additional drainage is required, a syringe can be placed on the end of the retentate tube and fluid can be blown down



*Figure 35: Product Recovery Setup.*

3. Replace retentate tubing (silicone, translucent) in retentate port. Reconnect pump outlet tubing (Sta-Pure, white).
4. Disconnect FEED IN tubing and place in collection vessel. Open tank outlet valve, turn pump speed up to drain reservoir.
5. Reconnect the pump outlet tubing (Sta-Pure, white) to the FEED IN port.

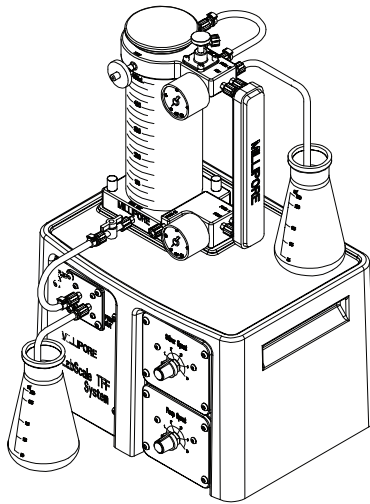
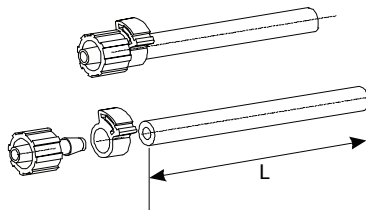


Figure 36: Product Recovery Setup.

## Diafiltration—Vacuum

### Install Diafiltration Tubing

1. Cut silicone (translucent) tubing and insert a male luer x 1/8. barb port in one end of the tubing as shown here. MALE  
Place the other end of the diafiltration tubing in a vessel of appropriate buffer.

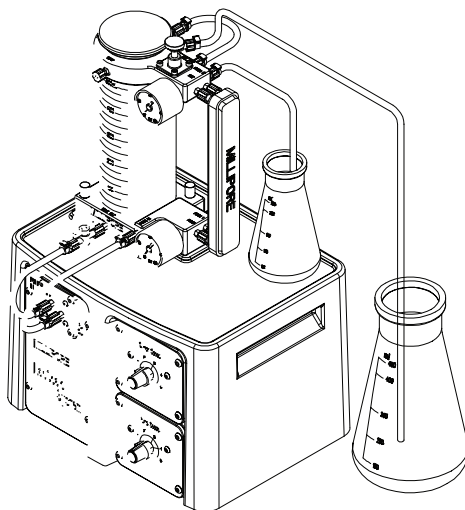


L = 50 cm (20 inches)

Fittings: 1 male

2. Connect male luer end of diafiltration tubing to the diafiltration (DIA/RECIRC) port. Plug VENT port.
3. Insure that the end of the tubing remains below the buffer level at all times.

As you remove permeate, a vacuum is created in the reservoir which will siphon diafiltrate into the reservoir to maintain constant volume.



*Figure 37: Diafiltration*

# Shutdown

## Cleaning Device

### Recommended Cleaning Solutions


Note: Follow solution manufacturer's directions for proper handling. Please refer to the Pellicon XL Device instructions packed with the device for the most current cleaning solution information.

Cleaning Agent	Concentration	Catalog Nos. with prefix PXB Biomax® (polyether-sulphone)	Catalog Nos. with prefix PXC PL (regenerated cellulose)	Temp °C	pH	Time (min)
NaOH	0.1-0.5N	X		40-45	13-13.7	30-60
NaOH	0.1N		X	25-40	13	30-60
NaOC1	250 ppm	X		40-45	10-11	30-60

Note: Do not exceed 2.07 Bar (30 psi) feed pressure during cleaning cycle.



## Clean System

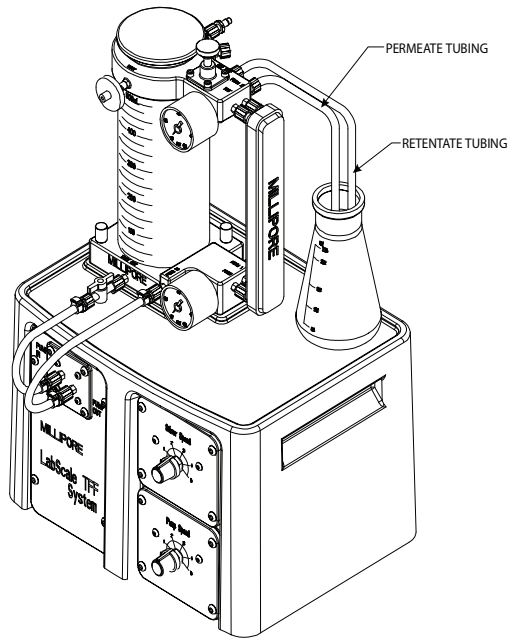
1. Disconnect retentate tubing (silicone, translucent) from RET IN port and place in waste collection vessel. Place end of permeate tubing in waste collection vessel.
2. Open retentate valve turn counterclockwise .
3. Remove reservoir cover and fill reservoir with 500 mL of cleaning solution. Ensure vent port is open by removing plug from VENT port and either leaving open or installing a Millex Filter.
4. Open tank outlet valve.
5. Turn pump on - increase pump speed until feed pressure gauge reads 1.38 Bar (20 psi).

---

Note: Check system connections for leaks—tighten connections if required

---


6. Continue pumping to the waste collection vessel until the level in the reservoir drops to 250 mL. Turn pump off. Reconnect the retentate (silicone, translucent) tubing to the RET IN port.
7. Connect the male luer end of the permeate tubing to the recirculation (DIA/RECIRC) port. Turn pump on increase pump speed until feed pressure gauge reads 1.38 Bar (20 psi).



---

Note: Check system connections for leaks—tighten connections if required

---

8. Adjust retentate valve restriction by slowly turning retentate valve clockwise  until the retentate pressure gage reads 0.69 Bar (10 psi). Adjust pump speed and retentate valve restriction to achieve 2.07 Bar (30 psi) feed pressure and 0.69 Bar (10 psi) retentate pressure.
9. Recirculate the cleaning solution for 30 - 60 minutes. Turn pump off.

## Drain System

See “Drain System” section, page 27.

## Flushing Device

Repeat flushing procedure detailed in “Flushing” section, page 31.

See instructions enclosed with the Pellicon XL device for storage information.

## Clean Base

1. Disconnect power.
2. Exterior surfaces of the Labscale 500 mL Reservoir and the Labscale System Base may be cleaned with a mild soap and water solution.

# Specifications

## Specifications

All wetted parts meet the requirements of USP Class VI testing and CFR 21 regulations.

Dimensions	21.6 x 27.9 cm (8.5 x 11 inches) Height: 45.7 cm (18 inches)
Weight	5.9 kg (13 lb)
Maximum pump outlet pressure	5.86 Bar (85 psig)
Maximum gauge pressure:	do not exceed gauge scale
Maximum Pellicon XL Device operating pressure	see instructions supplied with device
Operating temperature range	4.45°C Feed flowrate: 10.100 mL/min at 4.14 Bar (60 psi)
Minimum recirculation volume:	20 mL
Power	115V, 60 Hz or 230V, 50 Hz
CE mark	

## Materials of Construction

500 mL reservoir	acrylic
Reservoir cover	polypropylene
Reservoir cover gasket	EPDM
Luer fittings	316 stainless steel and polypropylene
Tubing	Platinum-cured silicone (translucent) and Sta-Pure (white) tubing
Diaphragm pump housing	glass-filled polypropylene
Diaphragm pump diaphragm	PTFE coated
Diaphragm pump check valve	polypropylene and Simriz <sup>®</sup> elastomer
Housing/enclosure	polyurethane

## EC Compliance Certificate



## Certificate of Compliance

Millipore Corporation certifies that the part listed hereafter :

Product name : LABSCALE  
Catalogue # : XX42LSS12, XX42LSS13

- Are manufactured (or supplied) by a Millipore facility whose Quality Management System is approved by an accredited registering body to the appropriate ISO<sup>®</sup>9001 Quality Systems Standard.
  - Are manufactured in accordance with applicable Millipore Standard Procedures.
  - Are tested in accordance with applicable Millipore Quality Specifications.
- 

### CE Compliance : Declaration of Conformity

We certify that this system is designed and manufactured in application of the following European Council directives :

- 73/23/CEE relating to Electrical equipment designed for used in certain voltage limits
- 89/336/CEE relating to Electromagnetic compatibility (EMC)

Standards to which conformity is declared applicable are the following :

#### EMC emissions

- EN61000-3-2 : Harmonic currents
- EN61000-3-3 : Voltage fluctuations and flicker
- EN 55011 : Conducted disturbances on power ports
- EN 55011 : Radiated disturbances electric component

#### EMC Immunity

- EN 61000-4-2 : Electrostatic discharges immunity test
- EN 61000-4-3 : Radiated , radio-frequency, electromagnetic field immunity test
- EN 61000-4-4 : Electrical fast transient burst immunity test
- EN 61000-4-5 : Surge immunity test
- EN 61000-4-6 : Conducted disturbances, induced by radio-frequency fields, immunity test
- EN 6100-4-11 : Shot interruptions and voltage variations immunity test

#### Electrical safety

- IEC 61010-1:2001 : Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements

Guy Reymann  
Quality Manager

Millipore, Hardware Systems Operations  
Molsheim, France

# Labscale TFF System Ordering Information

## Labscale TFF system kit

Description	Catalog Number
115V	XX42LSS11
230V	XX42LSS12
230V (GB)	XX42LSS13

Includes: Labscale 500 mL Reservoir, Labscale Stir Base with Labscale Pump Module installed.

Labscale TFF system components are also available separately.

Description	Catalog Number
Labscale 500 mL Reservoir with gauges	XX42RES01
Labscale Stir Base 115V	XX42STR11
230V	XX42STR12
230V(GB)	XX42STR13
Labscale Pump Module (can only be used with Millipore Labscale Stir Base)	XX42PMP01

## Compatible pumps and pump head

Description	Catalog Number
Peristaltic pump drive, 115V, variable speed, 60.600 rpm	XX8200115
Peristaltic pump drive, 230V, variable speed, 60.600 rpm	XX8200230
Pump head, 480 mL/min (3 roller)	XX8000003
Labscale system 1/8 in. tubing kit	XX80LFL25

After prolonged storage, the tubing may absorb a small volume of water. As a result, the tubing color may change from translucent to opaque, which is normal. Air or oven drying will return the color to translucent.

## Pellicon XL Devices

Please see instructions supplied with the Pellicon XL Device for ordering information.



# Labscale TFF System Maintenance

## Labscale Stir Base Spare Parts

Item Number	Description	Qty per Cat #	Catalog Number
1	Fuse	10	XX42LSP40
2	Thumb Screw	10	XX42LSP41
3	Transformer – 115V	1	XX42LSP42
4	Transfomer – 230V	1	XX42LSP43
5	Transformer – 230V (Great Britain)	1	XX42LSP44
6	Motor, Stirrer	1	XX42LSP45
7	Pump Assembly, Diaphragm	1	XX42LSP46
8	Speed Controller, Stirrer	1	XX42LSP47
9	Speed Controller, Pump	1	XX42LSP48

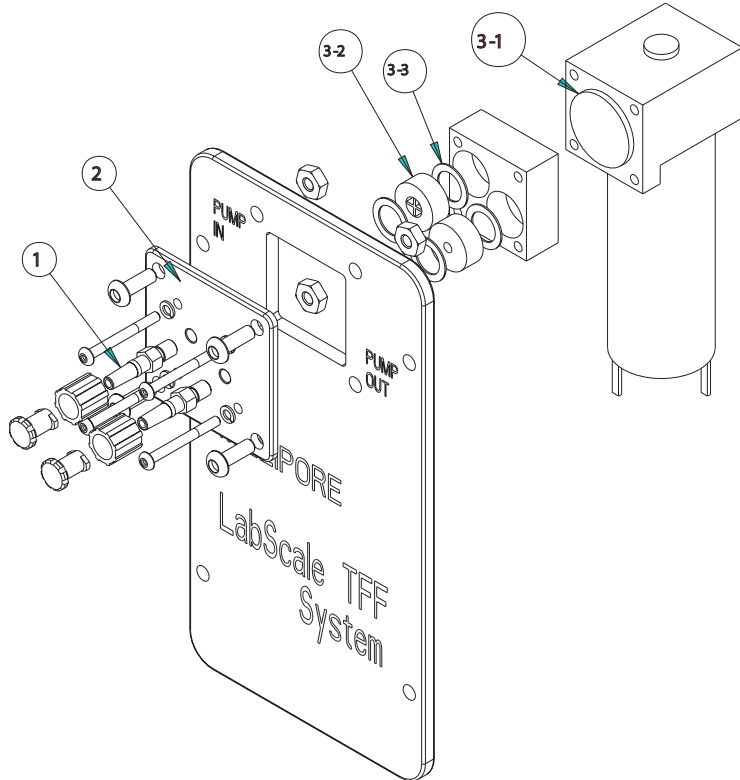
## Labscale 500 mL Reservoir Spare Parts

Item Number	Description	Qty per Cat. #	Catalog Number
1	Pressure gauge	1	XX42LSP20
2	Stir Bar	5	XX42LSP21
3	Tank Outlet Valve	12	XX42LSP22
4	Valve Diaphragm	1	XX42LSP23
5	Cover, Tank	1	XX42LSP24
6	O-Ring, Tank cover	5	XX42LSP25
7	Filter, Vent	50	SLFG025LS

Item Number	Description	Qty per Cat. #	Catalog Number
8	Fitting, Luer-Lok™ Female x 10-32 St. St'l	10	XX42LSP26
9	Fitting, Luer-Lok Male x 10-32 St. St'l	10	XX42LSP27
10	Tubing:		
10-1	Platinum-cured	6 ft	XX80LFL25
10-2	Sta-Pure Tubing	2 ft	
11	Plastic Fitting Kit:		XX42LSP28
11-1	Fitting, Female	10	
11-2	Fitting, Male Luer-Lok	10	
11-3	Plug	10	
11-4	Fitting, Luer-Lok Ring	10	
11-5	Fitting, Male Luer-Lok x 1/8 in. Barb	10	
11-6	Fitting, Female Luer- Lok x 1/8 in. Barb Clamp, Ratchet	10	

## LabScale Pump Module Spare Parts

Item	Description	Qty per Cat #	Catalog Number
1	Fitting, Male Luer-Lok x 10-32 St. St'l	10	XX42LSP27
2	Manifold, Pump	1	XX42LSP80
3	Pump Rebuild Kit Contains:		XX42LSP81
3-1	Diaphragm	1	
3-2	Check Valve	2	
3-3	Gasket, Check Valve	4	



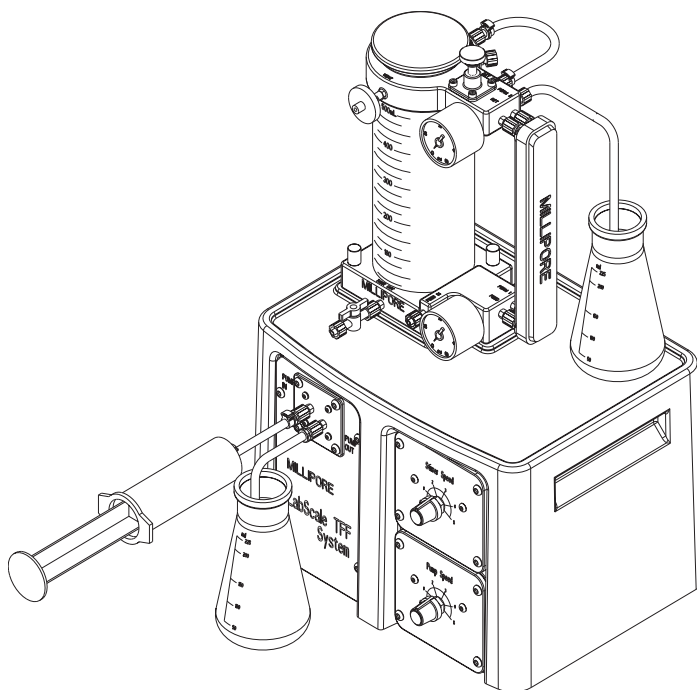
## Pump Check Valve Flushing

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Note: The pump should be shut off during this procedure

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1. Close the tank outlet valve
2. Disconnect the pump inlet tubing (silicone, translucent) from the tank outlet valve.
3. Disconnect the pump outlet tubing (Sta-Pure, white) from the reservoir FEED IN port and place the end in a waste collection vessel
4. Fill a syringe with warm water and inject the water through the pump and into the waste collection vessel.
5. Repeat Step 4 until approx. 100–200 mL of water flushed through the check valves



## Diaphragm Pump Maintenance

### Pump Panel Disassembly

1. Disconnect the AC adapter from its power source
2. Disconnect the AC adapter from the enclosure
3. Remove the Pump Panel from the enclosure
4. Disconnect the wires from the pump

### Check Valve Replacement

1. Remove the (4) Pump Screws
2. Disassemble the pump from the pump manifold
3. Remove the (2) check valves and (4) gaskets from the check valve housing.
4. Install new check valves and gaskets as shown below

### Diaphragm Replacement

1. Unscrew the diaphragm from the pump in a counterclockwise direction.
2. Install the new diaphragm by screwing the diaphragm in a clockwise direction until tight

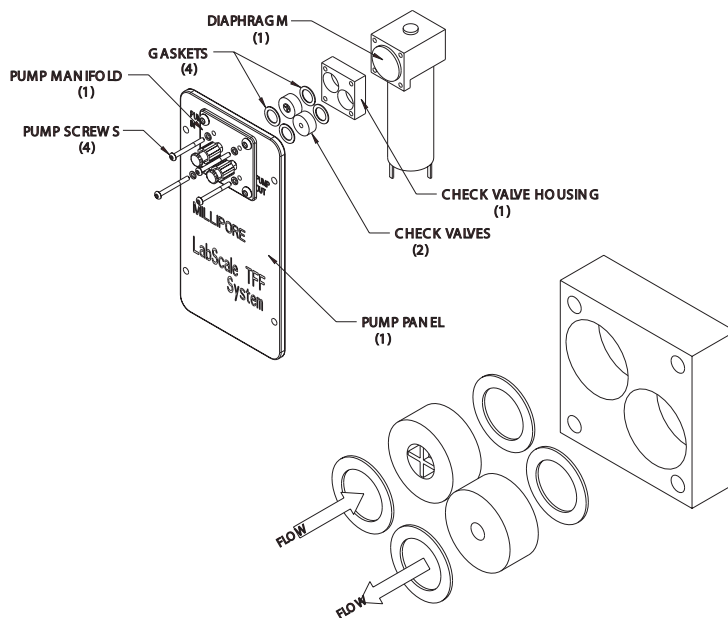
### Pump Reassembly

1. Seat the check valve housing onto the diaphragm
2. Seat the pump with check valve housing onto the pump manifold
3. Install the (4) pump screws and tighten

### Pump Panel Installation

1. Reconnect the pump wires

## 2. Reinstall the pump panel on the enclosure



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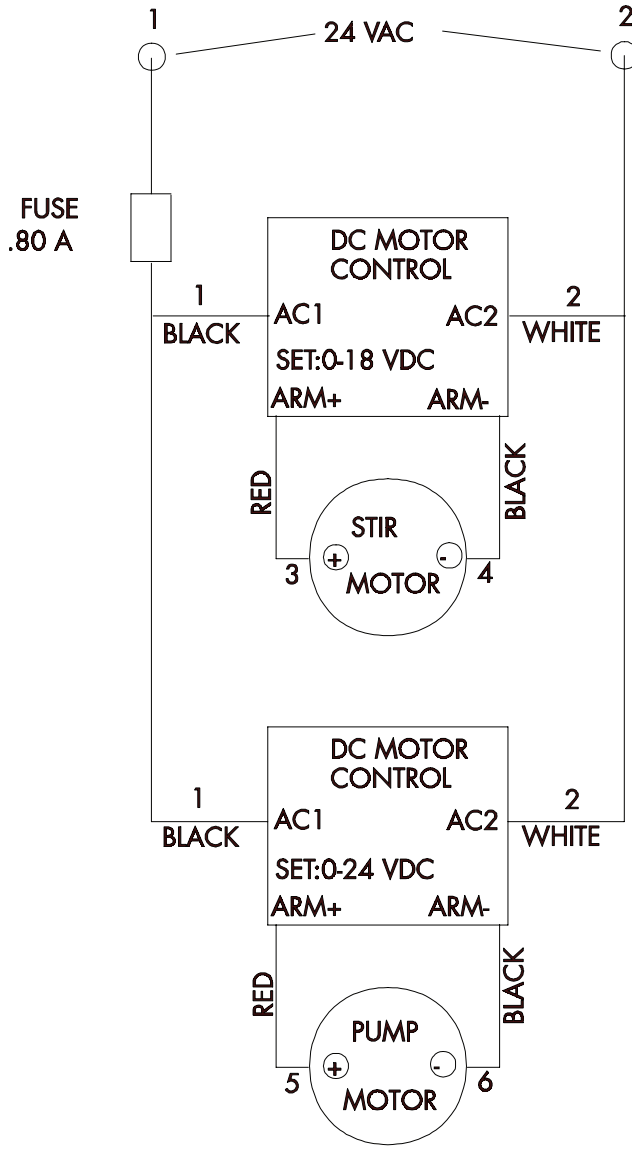
### IMPORTANT:

Check Valve orientation is as shown. Improper orientation of the check valves will damage the check valves and cause the pump not to function. The check valves are keyed to assist with proper orientation.

**DO NOT FORCE CHECK VALVES INTO HOUSING!**

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# Electrical Schematic



# Labscale TFF System Troubleshooting

## Electrical/Control

Symptom	Solution
Pump and stirrer do not operate	Check the following: AC adapter plugged into live receptacle with appropriate voltage
	AC adapter plugged into receptacle on the rear of system enclosure
	Check fuse on the rear of the system enclosure
Pump operates but the stirrer does not	Have a qualified technician check the function of the stirrer speed controller and the stirrer motor.
Stirrer operates but the pump does not	Have a qualified technician check the function of the pump speed controller and the pump motor.



## Performance

Symptom	Solution
MixingStirrer speed too slow	Have a qualified technician check the function of the stirrer speed controller.
Flow Pump flow too low	If the fluid moves back and forth in the pump inlet or pump outlet tubing, particulates may be impairing the pump check valves from closing. Ensure pump check valves are clean. See check valve flushing procedure in maintenance section “Pump check Valve Flushing” of this manual.
	If flushing the check valves does not eliminate the problem, replace pump check valves. See check valve replacement procedure in maintenance section “Diaphragm Pump Maintenance” of this manual.
	Have a qualified technician check the function of the pump speed controller.
No Flow (Pump operating)	Ensure tank outlet valve is open.
Excessive pulsation	If the fluid moves back and forth in the pump inlet or pump outlet tubing, particulates may be impairing the pump check valves from closing. Ensure pump check valves are clean. See check valve flushing procedure in maintenance section “Pump check Valve Flushing” of this manual.
	If flushing the check valves does not eliminate the problem, replace pump check valves. See check valve replacement procedure in maintenance section “Diaphragm Pump Maintenance” of this manual.

## Pressure

Symptom	Solution
System pressure too low	Check the following: Pressure gauge calibration.
	Ensure tank outlet valve is open.
	Ensure pump inlet and outlet tubing are connected correctly. Ensure Sta-Pure (white) tubing is connected from pump outlet to feed in port (FEED IN).
	If the fluid moves back and forth in the pump inlet or pump outlet tubing, particulates may be impairing the pump check valves from closing. Ensure pump check valves are clean. See check valve flushing procedure in maintenance section “Pump check Valve Flushing” of this manual
	If flushing the check valves does not eliminate the problem, replace pump check valves. See check valve replacement procedure in maintenance section “Diaphragm Pump Maintenance” of this manual
System Pressure too high	Check the following: Pressure gauge calibration
	The retentate back-pressure valve is closed





## Technical Assistance

For more information, contact the Millipore office nearest you. In the U.S., call **1-800-MILLIPORE** (1-800-645-5476). Outside the U.S., see your Millipore catalogue for the phone number of the office nearest you or go to our web site at [www.millipore.com/](http://www.millipore.com/) offices for up-to-date worldwide contact information. You can also visit the tech service page on our web site at <http://www.millipore.com/techservice>.

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