

Vibro-Lab35P

User Manual



Please be sure to read this entire user manual prior to use of the equipment.
Please read all safety instructions carefully.

This user manual is part of the product. Keep it in a safe place for future reference.
Replacement manuals can be downloaded from our webpage at:
www.sanimembranes.com

Vibro-Lab35P

User Manual

Content

1. Description	3
1.1. Introduction	3
1.2. Validity	3
1.3. Symbols	3
2. System.....	3
2.1. System description	4
3. Safety.....	4
3.1. Intended use	4
3.2. Personnel qualification	5
3.3. Media	6
3.4. Pressurized components	6
3.5. Leaking fluids	6
3.6. Sharp objects	6
3.7. Moving parts	7
3.8. Personal protective equipment.....	7
3.9. Accessories and spare parts.....	7
4. Assembly.....	8
4.1. Assembly of Drive	8
4.2. Mounting of Lab35 Cartridge	9
5. Operation.....	10
5.1. Vibro-Lab35P Pneumatic Drive, Use and Maintenance	10
5.2. Introduction to microfiltration and ultrafiltration setup using two pumps.....	12
5.3. Introduction to ultrafiltration setup using one pump	13
5.4. General guidelines – process.....	14
5.5. CIP operation	15
5.6. Storage of membranes	15
6. Technical Data	16
7. Conformity.....	17

Vibro-Lab35P

User Manual

1. Description

1.1. Introduction

The Vibro-Lab35P is a portable benchtop filtration system for continuous microfiltration and ultrafiltration applications. With a retentate volume of only 8 ml, and a membrane area of 35 cm² you can mimic a large-scale continuous filtration unit with less than 50 ml of feed. Applying the patented Vibro® technology the Vibro-Lab35P vibrates the rigid membrane cartridge relative to the media. Thus, creating turbulence in the media just on the membrane surface.

The turbulence created on the membrane surface ensures a fast and low fouling continuous filtration process without the need for a conventional tangential crossflow. The Vibro-Lab35P is perfect for process development, small batch production and other applications where traditional dead-end filtration devices and tangential crossflow solutions give up. It allows you to optimize separation parameters and screen membranes easily due to the easy Lab35 cartridge replacement system.

Disruptive in size, simplicity and process – no dead volumes, easy to clean, easy to service and simple to operate. The Vibro-Lab35P can separate the most demanding media with high viscosity, high solid loads and even high particulates with unprecedented results – less fouling, higher flux, higher degree of up-concentration.

1.2. Validity

This manual applies to the Vibro-Lab35P in the following versions: Lab35 (000-0005) cartridge together with the Vibro-Lab35P (001-0021) Pneumatic Drive

This manual applies to the Vibro-Lab35P in combination with the following components:

- Standard feed pump from SANI Membranes

1.3. Symbols

As warning of danger, all text statements in these instructions to be noted will be marked as follows:



WARNING

This symbol denotes a possible danger with medium risk that death or (severe) injury may result if it is not avoided.



CAUTION

This symbol denotes a possible danger with a low risk that moderate or minor injury may result if it is not avoided.

ATTENTION

This symbol denotes a danger with low risk of damage to property if not avoided.

The Vibro-Lab35P can be operated using a single feed pump for feeding in media and continuously collecting permeate, however using a feed and a retentate pump is preferable in order to control very small flows. The Vibro® technology will diminish fouling and the result is a stable separation process with unique and uniform control of the membrane conditions unmatched by conventional cross flow filtration.

Especially beneficial for microfiltration applications, the Vibro-Lab35P can be operated at extremely low and uniform transmembrane pressure by using two pumps for controlling the process. This is ideal for applications where high transmission of target molecules through the membrane is essential.

The membrane is mounted inside the Lab35 cartridge without the use of glue. The Lab35 Cartridge can be configured with virtually any commercially available MF or UF membrane. The pressure chamber is made in polypropylene and operates at up to 3 bar at room temperature. All media contact parts are in durable polymeric or elastomeric materials.

2. System

Vibro-Lab35P

User Manual



Parts list

1. Vibro-Lab35P
2. Lab35 Cartridge
3. 1 Air Handling Unit with pressure regulator, oil misting unit and exhaust filtration
4. 1 set of 6 mm tubing for pressurized air regulation
5. 1 set of 8 mm tubing for pressurized air regulation
6. Lubrication Oil

2.1. System description

The Lab35 Cartridge is a polypropylene assembly with integrated Air Cushions allowing for the Vibro® effect. Push in fittings provide ports for feed, retentate and permeate tubing.

The Lab35 Cartridge is mounted on the pneumatic Vibro-Lab35P Drive in a vertical position, using two finger screws. The Vibro-Lab35P Drive has a stainless-steel support with leaf springs to hold the vibrating pneumatic cylinder and the Lab35 Cartridge.

The compressed air is supplied to the pneumatic cylinder through 6 mm OD tubing connected to the 6 mm push in port on the back of the stainless steel support. A small on/off valve is used for activating and deactivating the vibration. The Vibro-Lab35P requires a compressed air supply at min. 6 bar. The pressure regulator on the air handling unit is used for regulating the air pressure for the pneumatic cylinder. This should normally be adjusted to provide 3.5 bar(g) air pressure. The pressurized air must be mist lubricated by pneumatic oil. Always check that the oil level is above the "Min" indication on the lubrication unit.

The exhaust air from Vibro-Lab35P is connected by 8 mm OD tubing from the return 8 mm push in port on the back of the steel base to the top of the Air Handling Unit acting as a silencer / exhaust air oil filter.

The standard way to run the Vibro-Lab35P is as a continuous batch filtration over a feed tank. Media is feed in through the feed inlet at the bottom of the Lab35 Cartridge. The permeate is collected through the permeate outlet and the retentate is returned to the feed tank from the retentate outlet. The process pressure is controlled with a retentate valve or preferably by a second peristaltic pump restricting the retentate flow rate. Available accessories include , all necessary tubing, fittings and a manometer stand.

See more about feed operation in the Operation section.

3. Safety

Please be sure to read this entire user manual prior to use of the equipment.

Please read all safety instructions carefully.

This user manual is part of the product. Keep it in a safe place for future reference.

3.1. Intended use

The Vibro-Lab35P assembly is a manually operated benchtop filtration system for MF and UF filtration. The user should read and understand this manual before use. The Vibro-Lab35P is intended for use in a laboratory setting or in an industrial, research or teaching facility.

The Vibro-Lab35P is intended to filter media and can only be used with a Lab35 Cartridge from SANI Membranes.

The Lab35 Cartridge is designed to operate at maximum 3 bar(g) at room temperature. The feed system could be the standard feed pump from SANI Membranes. Other feed systems can be used, but if capable of providing more than 3 bar(g), a CE approved safety valve of maximum 3 bar(g) must be used for protecting the Lab35 Cartridge.

Vibro-Lab35P

User Manual

The Vibro-Lab is NOT suited for use in explosive environments.  **WARNING**

This instruction manual is part of the Vibro-Lab35P and is intended exclusively for use in accordance with this instruction manual.

The Vibro-Lab35P must only be used for intended use, the following are examples of improper use  **WARNING:**

- Unauthorized modifications and technical changes to the Vibro-Lab35P are improper use.
- Operation outside the permissible physical conditions given in this document (e.g. temperature, pressure, chemical vapors etc.) and given in the specification sheet for the Lab35 Cartridge used.
- Installation of unauthorized items on the Vibro-Lab35P.
- Connection of unsuited devices to the Vibro-Lab35P (e.g. unsuited feed systems).
- Use of media with biological materials in Safety Classes 2 and 3.
- Use of flammable or potentially explosive substances.
- Filtration of unstable media.
- Use of media which are incompatible with the materials in the Lab35 Cartridge or the feed system used (check specification).

3.2. Personnel qualification

All personnel operating the Vibro-Lab35P must have read this instruction manual thoroughly and be skilled in the art of pressurized filtration. All personnel operating the Vibro-Lab35P should be used to conduct themselves in a laboratory environment and have passed mandatory safety courses etc. Students operating the Vibro-Lab35P must be instructed thoroughly by skilled teachers or other skilled personnel in proper use of the Vibro-Lab35P.

Vibro-Lab35P

User Manual

3.3. Media

The media used in the system can be dangerous to handle and cause personnel injuries or equipment damage when not handled correctly.

The operator should always seek the applicable safety information for the media to be filtered (e.g. handling and storage and conduct in emergency situations).  **WARNING**

Personal safety equipment should always be worn when applicable (e.g. safety goggles, safety gloves etc.).  **WARNING**

Do not use media with biological materials in Safety Classes 2 and 3.  **WARNING**

Do not use flammable or potentially explosive substances.  **WARNING**

Do not use unstable media where concentration changes might start chemical reactions within the media.  **WARNING**

The operator should always make sure that the media to be filtered is compatible with the materials in fluid connection in the Lab35 and the feed system used. **ATTENTION**

3.4. Pressurized components

Pneumatic system

The Pneumatic Vibro-Lab35P Drive and the tubing and fittings between it and the regulator on the Air Handling Unit are a separate pressurized system. The Regulator is supplied with external compressed air at maximum 10 bar. The Regulator is used to regulate the pressure to the Pneumatic Vibro-Lab35P Drive (which should be set to 3.5 bar(g) at normal operation). Parts of the pneumatic system can burst if they are subjected to pressures over 7 bar.  **WARNING**

Liquid system

If the feed pressure needed for the membrane process is generated by an external feed system (not included), then the cartridge, the external feed system and the tubing and fittings between the external feed system and the membrane cartridge are one pressurized system. The system must be **operated at maximum 3 bar(g)** at room temperature and if the external feed system is capable of providing more than 3 bar(g) to the pressurized system it must have a CE approved safety relief valve set at **maximum 3 bar(g)**.

3.5. Leaking fluids

If the fluid system is leaking, liquid spill can cause a serious health danger depending on the media. The operator should always seek the applicable safety information for the media (e.g. handling and storage and conduct in emergency situations). Personal safety equipment should always be worn when applicable (e.g. safety goggles, safety gloves etc.).  **WARNING**

If the fluid system is leaking, liquid spill to the floor can cause a slipping hazard.  **CAUTION**

3.6. Sharp objects

The leaf springs are sharp objects. Be careful not to get in contact with the leaf springs when assembling or disassembling the system.  **CAUTION**

Vibro-Lab35P

User Manual

3.7. Moving parts

Body parts can be crushed when they come into contact with moving parts, e.g. the membrane assembly. This can lead to injuries.

 **WARNING**

Lose hair or lose clothing parts can be caught in moving parts and cause injuries.  **CAUTION**

The Vibro-Lab35P must be placed on a horizontal non-slippery surface as the vibrating movement can otherwise make the Vibro-Lab35P move during operation and can cause injuries if it falls to the floor.  **CAUTION**

3.8. Personal protective equipment

Mandatory personal protective equipment to protect against risks arising from the equipment or the material being processed:

- Tight-fitting work clothing - Protects against being caught by moving parts.  **CAUTION**
- Head covering - Protects hair from being pulled into moving parts.  **CAUTION**
- Safety glasses - Protects against substances leaking under high pressure, splashing liquids etc.  **WARNING**
- Safety shoes - Protects against injuries to the feet caused by mechanical effects.  **CAUTION**

3.9. Accessories and spare parts

The Vibro-Lab35P can only be used together with a feed system that provides a maximum pressure of 3 bar(g). If the system is capable of providing more than 3 bar(g) a CE approved safety relief valve set to maximum 3 bar(g) must be used. The feed system could be the standard feed pump from SANI Membranes.

The use of unsuitable accessories, consumables and spare parts can be hazardous and have the following consequences:

- Severe personnel injury  **WARNING**
- Damage to the device  **WARNING**
- Malfunctions of the device **ATTENTION**
- Device failure **ATTENTION**

Only use accessories, consumables and spare parts that are in technically perfect condition.

The use of accessories, consumables and spare parts **not** approved by SANI Membranes is the sole responsibility of the operator.

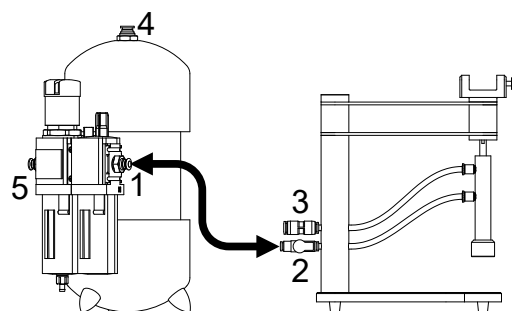
Vibro-Lab35P

User Manual

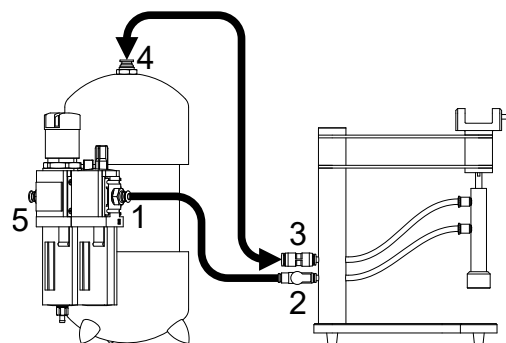
4. Assembly

4.1. Assembly of Drive

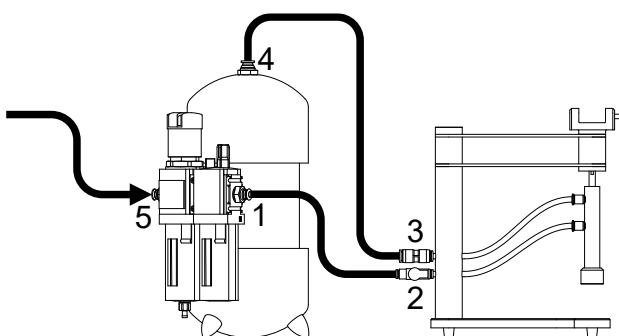
1. Connect the outlet from the air lubrication unit (1) to the Air Inlet (2) on the Vibro-Lab35P using a suitable length of the 6 mm tubing.



2. Connect the Air Outlet (3) on the Vibro-Lab35P back to the Air Handling Unit exhaust filter (4) using the 8 mm tubing.



3. Connect the external compressed air supply (minimum 6 bar and maximum 10 bar) to the Pressure Regulator on the Air Handling Unit (5) using 6 mm tubing.

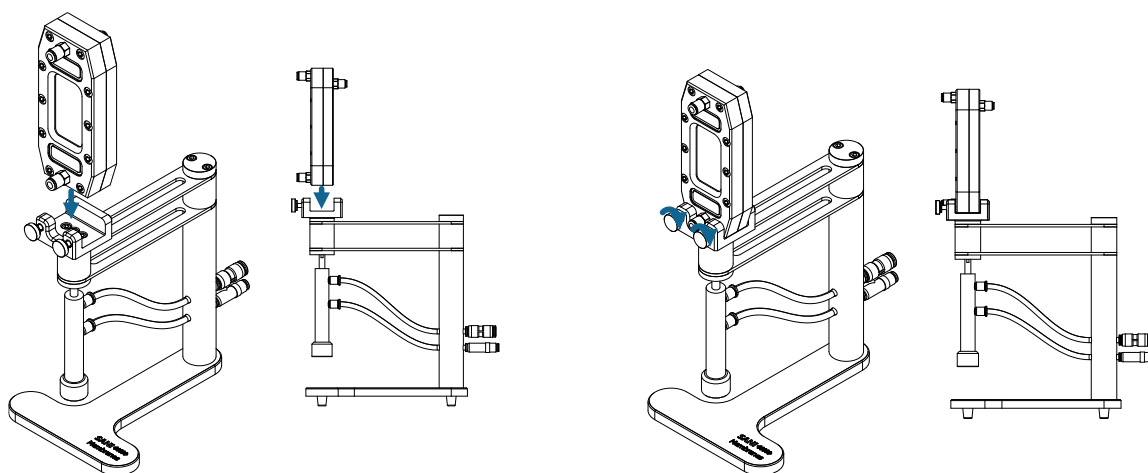


Vibro-Lab35P

User Manual

4.2. Mounting of Lab35 Cartridge

Mounting the Lab35 Cartridge on a Vibro-Lab35P is a simple operation. The Lab35 Cartridge is secured with two M5 x 16 finger screws running through the support console and into the cavity of the hex bolts in the bottom of the Lab35 Cartridge. Tighten the finger screws to keep the cartridge stable and secure during operation.



1. Insert the Lab35 Cartridge into the support console. Turn the cartridge so that the permeate outlet on the back is facing up.
2. Tighten the Lab35 Cartridge into place using the two knobs on the finger screws on the front of the support console. The screws should fit onto the two lower hex bolts on the Cartridge. Tools are not needed, but make sure to tighten enough to avoid that the cartridge can move during operation.

Vibro-Lab35P

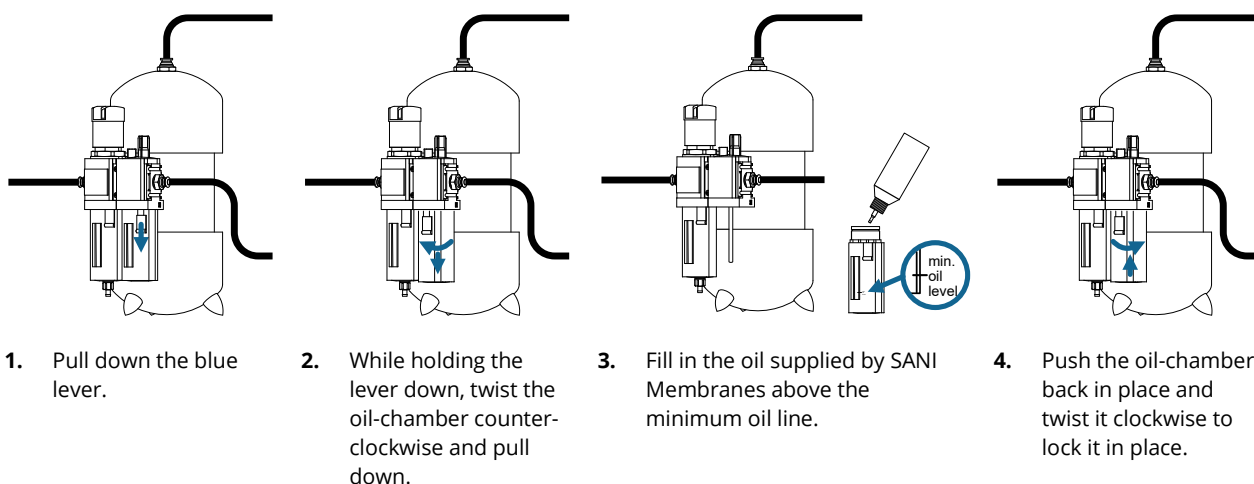
User Manual

5. Operation

5.1. Vibro-Lab35P Pneumatic Drive, Use and Maintenance

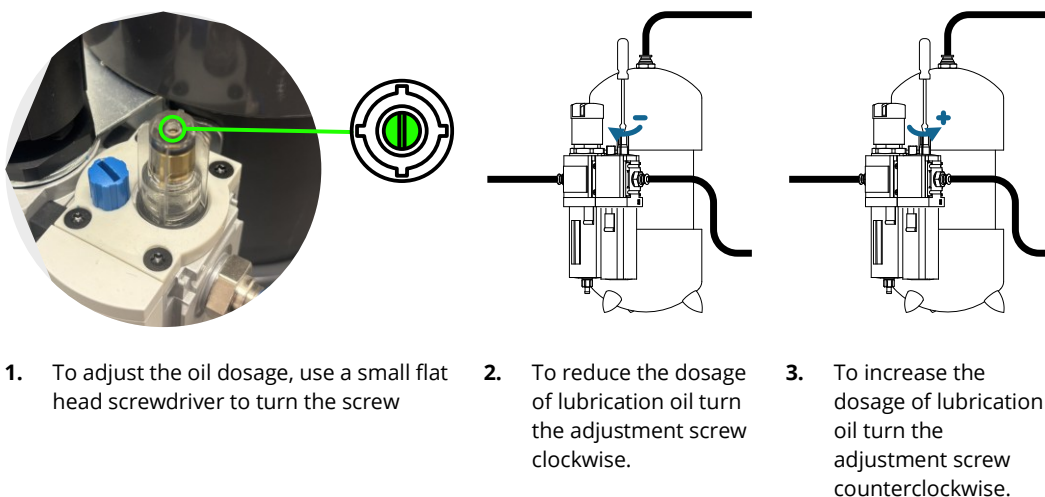
Oil change.

Before running the Vibro-Lab35P, the air lubricator needs to be filled with oil.



Adjust the amount of oil dosage.

The system has an adjustment screw at the top of the air lubrication unit. By turning this screw clockwise the dosage is reduced but even at the most "closed" position there is a minimum dosage to the pneumatic drive. Turning the adjustment screw counter-clockwise will increase the oil dosage. Only a small amount of lubrication is needed, so the screw can normally be turned to the most closed position.



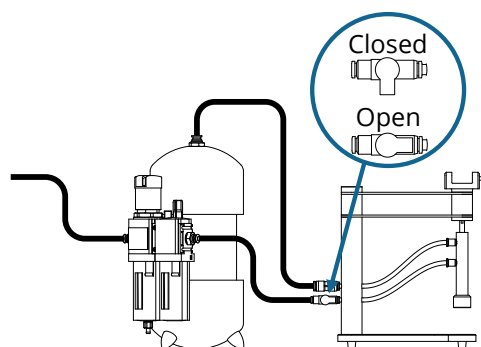
Vibro-Lab35P

User Manual

Turn on / off.

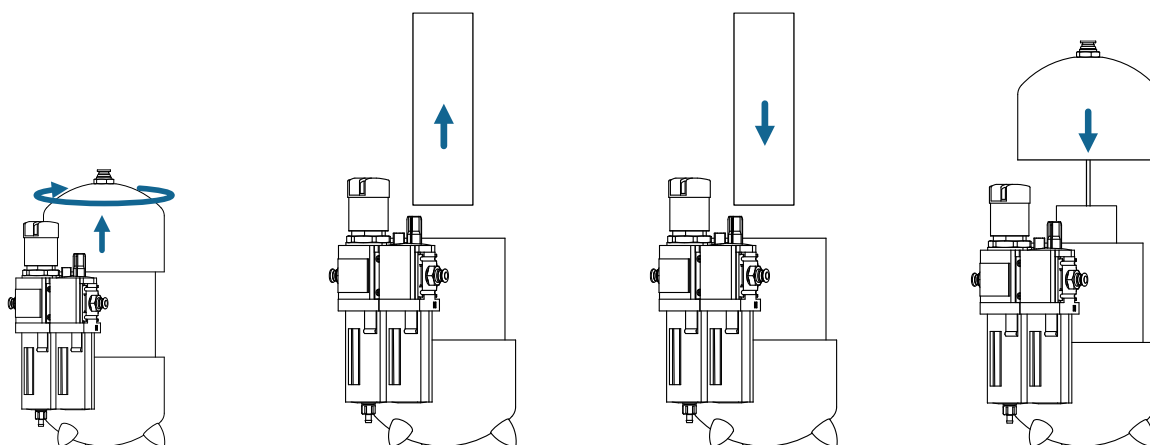
Before turning on the pneumatic drive adjust the air pressure on the pressure regulator to 3.5 bar(g).
The Vibro-Lab35P can be turned on and off using the valve at the back of the stainless steel stand.

1. When the valve is closed, the vibration is turned off.
2. When the valve is in open position, the vibration is turned on.
3. When the pneumatic drive is running check and if needed re-adjust the pressure regulator to provide an air pressure of 3.5 bar(g)



Change Air Filter

The Air Handling unit comes with an internal air filter, that removes the used oil from the exhaust gas from the Vibro-Lab35P. This filter will retain the lubrication oil and needs to be changed regularly for reliable performance. It is recommended to replace the filter for every two bottles of oil used by the system. To change the filter:

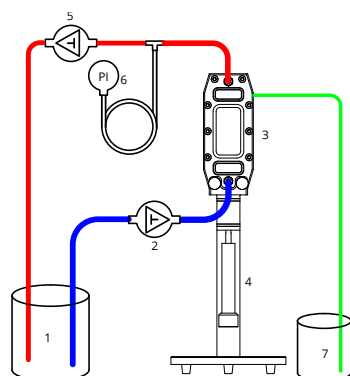


1. Twist and pull the large cap off the Air Handling unit.
2. Remove the used filter and clean the inside of the unit if needed
3. Unpack the new filter, and insert it into the Air Handling unit.
4. Press the cap onto the Air Handling unit.

Vibro-Lab35P

User Manual

5.2. Introduction to microfiltration and ultrafiltration setup using two pumps



1. Feed/Retentate Vial
2. Peristaltic Feed Pump
3. Lab35 Cartridge
4. Vibro-Lab35P Drive
5. Peristaltic Retentate Pump
6. Manometer
7. Permeate Vial

Many new membranes are supplied with a water-soluble glycerin layer for protection. Before introducing product, this should always be conditioned by washing thoroughly with clean hot water. A 20 min warm water wash where both retentate and permeate is discarded continuously is recommended before use.

Always use the best quality water you have access to. Water is many things and parts like carbonates, phosphates, particles etc. present in normal tap water can harm the effectiveness of the membrane and the CIP cleaning.

Introduction of feed solution:

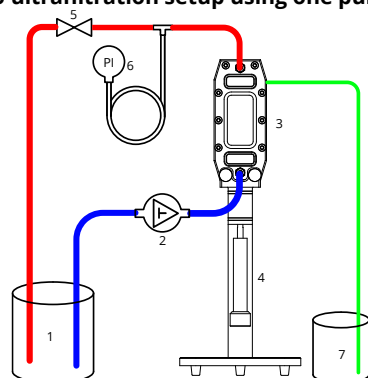
1. Start with a fully assembled Vibro-Lab35P unit as shown above.
The use of two pumps is recommended for microfiltration applications.
Tip: To avoid dilution of the feed solution the system can be drained from water just before introducing the product media.
2. Fill the Feed/Retentate Vial (1) with your feed solution.
3. Start the Peristaltic Feed Pump (2) and the Peristaltic Retentate Pump (5) at the same speed.
Tip: The recommended retentate flow rate is 4-8 L/h per Lab35 module which corresponds to around 80-90 RPM on the standard SANI Membranes laboratory pump.
4. Start the Vibro-Lab35P Drive (4) as soon as the Lab35 Cartridge is filled with feed solution.
5. Adjust the speed of the Peristaltic Feed Pump (2) until the desired permeate flow rate is reached, or the desired pressure is reached. For microfiltration, the pressure may initially be too low to observe, however a low flux eliminates fouling, secures a sharper separation and enables higher transmission of target molecules.
6. Re-adjust the speed of the Peristaltic Feed Pump (2) throughout the experiment to run at the desired permeate flow rate.
7. Collect the permeate in a separate Permeate Vial (7) to study the process during concentration mode.
To study the process, especially product transmission and transmembrane pressure at varying permeate flow rates the permeate can be returned to the Feed/Retentate Vial (1) to keep the feed solution composition constant.
8. When the experiment is finished:
Adjust the Peristaltic Pumps to have the same flow rate / no permeate flow rate and then stop both pumps. For draining of the concentrated liquid inside the module: Lift the retentate tubing above the liquid level in the Feed/Retentate Vial and start both pumps running in reverse.
After collecting the product the system should be filled with liquid to prevent the membranes from drying out.

Clean the system with an appropriate CIP protocol for your membrane and application (Remember to CIP the manometer tubing as well). Make sure to run the Peristaltic Feed Pump at slightly higher RPM than the Peristaltic Retentate Pump to clean the permeate side too. Finish the CIP by a clean water rinse. For storage until next use see separate section on storage of membranes.

Vibro-Lab35P

User Manual

5.3. Introduction to ultrafiltration setup using one pump



1. Feed/Retentate Vial
2. Peristaltic Feed Pump
3. Lab35 Cartridge
4. Vibro-Lab35P Drive
5. Retentate valve
6. Manometer
7. Permeate Vial

Many new membranes are supplied with a water-soluble glycerin layer for protection. Before introducing product, this should always be conditioned by washing thoroughly with clean hot water. A 20 min warm water wash where both retentate and permeate is discarded continuously is recommended before use.

Always use the best quality water you have access to. Water is many things and parts like carbonates, phosphates, particles etc. present in normal tap water can harm the effectiveness of the membrane and the CIP cleaning.

Introduction of feed solution:

1. Start with a fully assembled Vibro-Lab35P unit as shown above.
Tip: To avoid dilution of the feed solution the system can be drained just before introducing the product media.
2. Fill the Feed/Retentate Vial (1) with your feed solution.
3. Start the Peristaltic Feed Pump (2).
Tip: The recommended retentate flow rate is 4-8 L/h per Lab35 module which corresponds to around 80-90 RPM on the standard SANI Membranes laboratory pump.
4. Start the Vibro-Lab35P Drive (4) as soon as the Lab35 Cartridge is filled with feed solution.
5. Adjust the Retentate valve (5) until the desired retentate pressure (6) is reached.
When increasing this pressure the retentate flow rate may drop due to the additional resistance for the Peristaltic Feed Pump (2).
Check the retentate flow and adjust the Peristaltic Feed Pump if needed to keep a retentate flow rate of 4-8 L/h.
6. When the feed solution becomes more concentrated the resistance in the Retentate valve will change and the pressure may change as a result:
Check the pressure regularly and make any necessary adjustments using the Retentate Valve.
Check the retentate flow and adjust the Peristaltic Feed Pump if needed to keep a retentate flow rate of 4-8 L/h.
7. To find the optimum operating pressure study the permeate flow rate as a result of increasing retentate pressures. This is best studied at steady-state conditions by returning the permeate to the Feed/Retentate Vial.
To find the relationship between flux and concentration study the permeate flow rate as a result of increasing product concentration. This is best done at constant retentate pressure, and by collecting the permeate in a separate vial.
8. When the experiment is finished:
Stop the Peristaltic Feed Pump and open the Retentate Valve.
For recovery of the concentrated liquid inside the module: Lift the retentate tubing above the liquid level in the Feed/Retentate Vial and run the Peristaltic Feed Pump in reverse until bubbles appear.
After collecting the product in the feed/retentate vial the system should be filled with liquid to prevent the membranes from drying out.

Clean the system with an appropriate CIP protocol for your membrane and application (Remember to CIP the manometer tubing as well). Make sure to adjust the Retentate valve to generate a positive pressure to drive the liquid through the permeate side of the membrane unit. Finish the CIP by a clean water rinse. For storage until next use see separate section about storage of membranes.

Vibro-Lab35P

User Manual

5.4. General guidelines – process

1. Maintain a positive trans membrane pressure when vibration is on.
2. Maintain a retentate flow to avoid dead-end type filtration. The required retentate flow is highly application dependent but a flow rate of 4 – 8 L/h is recommended. For highly viscous feed solutions or feed solutions containing highly concentrated solid matter higher retentate flow rates may be applicable.
3. The Operating Pressure should be in accordance with the Cartridge specifications.
4. For microfiltration a very low trans membrane pressure often gives the best long-term results.

Microfiltration (typically 0 – 1 bar)

1. Focus on controlling the permeate flow rate rather than controlling the pressure. Often, a very low pressure (below 0.1 bar) is optimal especially in case of transmission sensitive microfiltration processes.
2. Applying too high permeate flow rates can easily result in severely fouled areas in the Vibro-Lab35P. Limit the permeate flow rate by using the two-pump setup and study the process at increasing permeate flow rates for selecting optimal operating conditions.

Ultrafiltration (typically 1 – 3 bar)

1. A pressure of 1 to 2 bar often gives the best long-time results.
Make sure that the system pressure does not exceed the rated pressure – a safety valve may be required.

Vibro-Lab35P

User Manual

5.5. CIP operation

The following procedure is a general guideline for the cleaning of the Lab35 Cartridge. The individual process and product may require an optimization of the cleaning procedures to achieve satisfactory cleaning results. Please consult a qualified chemicals supplier for application specific cleaning regimes.

Important:

The actual selection of CIP chemicals, their concentration and the temperature used should be in accordance with the chemical compatibility of the individual membrane.

Water flushes, buffer flushes or CIP cleaning must be performed after each run with media in the Lab35.

For each cleaning step ensure that liquid flows through the permeate line. This is done by adjusting the retentate valve (UF setup) or increasing the speed difference between the two pumps (MF setup)

Remember to clean dead ends too, such as the line to the manometer. This can be disconnected and flushed separately for cleaning.

A typical CIP routine for operation with organic material could consist of:

1. A 55 °C hot water flush to remove loosely attached material and warm up the system before CIP.
2. A 30 min 55 °C caustic wash at pH 11-12 with an appropriate CIP chemical (observe membrane compatibility).
3. A water flush to replace the caustic liquid.
4. A 15-20 min 55 °C acid wash at pH 2 with an appropriate CIP chemical (observe membrane compatibility).
5. A thorough water flush.

After cleaning the membrane, the clean water flux should be measured. By comparing the clean water flux after each cleaning cycle with the original membrane performance it is possible to determine if the cleaning regime is sufficient to ensure a good recovery of the membrane. As the clean water flux is temperature and pressure dependent the measurement should be done at the same reference conditions for direct comparison.

Although it is membrane and application dependent, a recovery of 80% or more of the initial water flux should be expected from a suitable cleaning regime.

5.6. Storage of membranes

The membrane should never be allowed to dry out. When idle the Vibro-Lab35P should be filled with water or a suitable aqueous solution. For short term storage (hours) it can be left in water. For longer periods it is recommended to add a suitable solution to keep the membranes wetted, and to prevent bacterial growth during storage.

The storage solution should be selected in accordance with the chemical compatibility of the specific membrane material. Some examples of storage solutions are:

- 0.1 N NaOH
- 20% ethanol
- 20% isopropanol

For long term storage it is recommended to replace the storage solution at regular intervals, for instance every 3-6 months.

When preparing the membrane Cartridge for storage it is important to evacuate the permeate compartment from air. This is best done by recirculating the storage solution in the process setup applying a suitable permeate flow until air does not appear in the permeate outlet. Once the membrane module is evacuated from air the three Cartridge ports should be closed by plugs.

Vibro-Lab35P

User Manual

6. Technical Data



Vibro-Lab35P Drive	
Weight	2.4 kg
Dimensions (L x W x H)	150 mm x 200 mm x 391 mm
Compressed air	6 – 10 bar(g)
Noise Level	60 – 65 dBA



Lab35 Cartridge	
Cartridge materials	Polypropylene, EPDM, food grade biopolymer & membrane*,
Membrane Type	Most organic membranes (MF, UF, and other filter types)
Membrane Area	35 cm ²
Dimensions (L x W x H)	50 mm x 30 mm x 150 mm
Internal Retentate volume	8 ml, drainable
Internal Permeate volume	negligible

Lab35 Use	
Media Temperature Range	5 – 55 °C*
Operating Pressure	0 – 3 bar (g)
pH Range	1 – 13*
Viscosity Range, apparent	1 – 1000 cP

*Ref. to membrane specification

Vibro-Lab35P

User Manual

Vibro-Lab35P Accessories and Spare Parts	
Lab35 Cartridge	Lab35 Cartridge with your membrane of choice
Feed Pump	Peristaltic pump with silicone tubing, 0-1 L/min
Retentate pump	Peristaltic pump with silicone tubing, 0-1 L/min
Air Handling Unit	Service module with pressure regulator, air lubrication unit and air filtering / silencer
Oil mist filter	Filter element for air filtering
Manometers	Manometer stand with 0-1 bar(g) & 0-4 bar(g)
Fittings & tubing kit	Package of all needed push-in fittings, straight connectors, T's, hose barb adaptors and valves. Including 2 m of 4 mm and 6 mm tubing

7. Conformity

SANI Membranes are committed to develop and supply products that meet relevant regulatory standards and requirements set by governing bodies. For further compliance or safety information, please contact SANI Membranes customer support.

The Vibro-Lab35P system is CE marked to demonstrate compliance with pertinent regulations, including the European Machine, Electrical and Pressure Directives. Hereunder we declare our sole responsibility that, the models mentioned in this manual are, when used as specified, in conformity with the technical requirements of the standards and the provisions of the essential requirements of the EU and other Directives detailed below:

- 2006/42/EC – Safety of machinery.
- 2014/35/EU – Low voltage equipment.
- 2014/68/EU – Pressure Equipment.

Electrical and electronic equipment (EEE) contains materials, components and substances that may be hazardous and present a risk to human health and the environment when waste electrical and electronic equipment (WEEE) is not handled correctly. Components marked with the crossed-out wheeled bin are EEE and we advise caution when discarding it and attention towards proper sorting.

