PENTAIR

LINEGUARD UF-100
COMPACT WATER SYSTEMS
POINT-OF-ENTRY

MANUAL

MAN LINEGUARD UF-100 EN 0315

PENTAIR

LINEGUARD UF-100
COMPACT WATER SYSTEMS

INSTALLATION & OPERATING MANUAL

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1 INTRODUCTION

Thank you for choosing a LineGuard UF-100 water filtration system. Please refer to the product datasheet for details on performance, conditions of use, and storage and handling of this product.
The LineGuard has been specifically designed to remove viruses, bacteria, cysts and protozoa such as Cryptosporidium, Giardia, and Legionella from your drinking water, while allowing healthy, natural minerals to pass through. It will also eliminate any turbidity from your drinking and shower water.

1.1 Important precautions

1. The LineGuard system is intended for indoor use only.
2. The LineGuard system is only suitable for municipal (treated) water and cold or mixed water lines. The maximum permitted operating temperature is 50 °C/122 °F.
3. The maximum operating pressure of the filter system is 4 bar/58 psi. It is recommended to install a pressure controll valve and a pressure relief valve that relieves water pressure above 4 bar/58 psi to the drain of the system. Please check with your water company or pump supplier for information on the existing water pressure.
4. If the LineGuard is mounted in a water system already in use, please make sure to disinfect the piping after the filter system.
5. Protect against freezing after first use.
6. Handle with care, do not expose to shocks.
7. Please check your national plumbing codes and ensure that you follow those guidelines when installing the water filtration system.
8. Make sure the filtration system is properly connected in the water system by closely following the instructions in this manual.
9. The room where the LineGuard is installed should be provide with an water barrier and drain.

1.2 Parts included

- LineGuard (frame and control unit)
- Membrane modules (2 pcs)

1.3 Tools and materials required for installation

- Hexagon key 4 mm
- Hexagon key 5 mm

2 HOW THE LINEGUARD WORKS

2.1 Filtration mode

The LineGuard membrane modules contain hundreds of capillary ultrafiltration (UF) membranes. The porous walls of these hollow fibers contain billions of microscopic pores which act as an ultra-fine sieve. The water pressure pushes water molecules and vital minerals from the inside-out through the pores of the membrane fibers, while retaining larger contaminants such as bacteria, parasites and viruses. Automated cleaning cycles periodically flush out the contaminants retained inside the membranes. Once the LineGuard has been installed on the main water supply line, the water is filtered by the membrane modules.

2.2 Cleaning cycles

Contaminants in the water foul the inner surface of the membranes, which affect the performance of the system. The LineGuard is equipped with a control unit that sets automated cleaning cycles so that this fouling is periodically flushed out. There are two types of cleaning cycles: a forward flush and a backwash.

In a forward flush the membranes are flushed with feed water. The feed water flows through the inner part of the membranes at a much greater speed than in the filtering mode. Because of this high flow and the resulting turbulence, the fouling on the membrane is released and discharged. The flush water is discharged to the system drain. Particles that are caught in the membrane pores are not released and can only be removed with a backwash. Please note that the backwash needs backpressure from the water line after the system for an optimal cleaning cycle. Whenever the LineGuard discharges to an open system, like a water tank, the backwash will be not be performed at an optimal level.

A backwash is performed by reversing the filtration process. Filtered water (or permeate as it is called) is flushed from the outside to the inside of the membranes. This way, particles that are caught in the membrane pores are released and discharged. In a backwash the LineGuard uses permeate from one module to backwash the other so that the modules will not foul at the 'clean side'. The flush water is discharged to the system.

The LineGuard is ***set*** to automatically perform one 30 second flush cycle a day at 01:00 am. Frequency, duration and time can be adjusted by setting the control unit of the system. The optimal duration and frequency of the flush cycle depends on the water quality and usage. On average one flush per day should be sufficient. Your installation company can advise you on the right settings.

A flow sensor will prevent the system from flushing when in use. Whenever water is used at the moment of a scheduled cleaning cycle the system will wait and resume the cleaning cycle 30 seconds after the water usage has stopped.
Whenever large quantities of water are used, additional cleaning cycles should be performed. This is done by setting a flush volume in the control unit. Upon reaching this volume a cleaning cycle will be performed. A volume flush will overrule the normal flush interval.

Whenever low quality feed water is used, the performance of the system might decrease rapidly. The performance of a filter module is determined by the "flux" (defined as the quantity of permeate that passes through the membrane surface per amount of time).
A cleaning cycle can also be performed by setting a flux flush. For example, when a flux flush of 10% is ***set***, a cleaning cycle will be performed when the flux over the filter modules is decreased by 10%. A flush flux will overrule the normal flush time interval. A cleaning cycle will take place whenever the flush volume or flux flush is reached. After the cycle, these settings will be reset.

2.3 Parallel installation of multiple LineGuards

A LineGuard UF-100 has a initial flow rate of 60 l/min (3.6 m3/h). In case more capacity is needed, parallel installation of up to five LineGuard systems is possible. Please contact your installation company for details and a preferred installation scheme.
In case multiple LineGuards are installed, they will be part of bigger installation which might have a constant demand for water that will permantently overrule the flushing cycles. This will have a negative influence on performance of the system. In this case a flushing overrule should be set (see 4.3.2.7).
The flushing cycles of multiple LineGuard need to be set out-of-phase (see 4.3.2.1)

3 INSTALLATION OF THE LINEGUARD

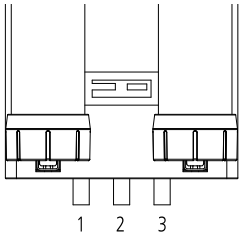
The LineGuard membrane filtration system should be installed in the main water supply line near its entry into the building. It should be placed at any point past the main shut-off valve, before the pipes branch off into multiple directions.
This manual provides general guidelines for the installation. Please keep in mind that the installation must always comply with all local and national plumbing guidelines and should be carried out by a certified installation company.

3.1 Mounting the LineGuard

The LineGuard should be attached to the wall with suitable fasteners. The wall has to be flat and the material must be strong enough to support the LineGuard. In order to allow enough built-in space for the water pipes and for the display to be at a readable height it is recommended to mount the LineGuard at 600 mm (2 feet) above floor level. At least 100 mm (4 inches) of clear space is recommended at the top for releasing the modules.

3.2 Piping installation

The LineGuard membrane filtration system should be placed on the main water supply line near its entry into the building. It can be situated at any point past the main shut-off valve, but before the pipes branch off into multiple directions. To install the LineGuard, three 22 mm pipe ends must be connected. See the figure below. An adapter 22 mm to 3/4 inch is included.



1 - Drain
2 - Filtered water
3 - Feed water
ø 22 mm pipe ends
(adapter to 3/4 inch is included)

Figure 1: Connecting the LineGuard

Warning: before installing the LineGuard please thoroughly disinfect the piping structure behind the LineGuard. Any biofilm that may be in the piping could contaminate the filtered water from the LineGuard!

Please review the recommended piping schematic below for a correct installation. A full installation scheme is included in the back of this manual. Please note that any alteration to this might lead to problems with servicing the LineGuard.

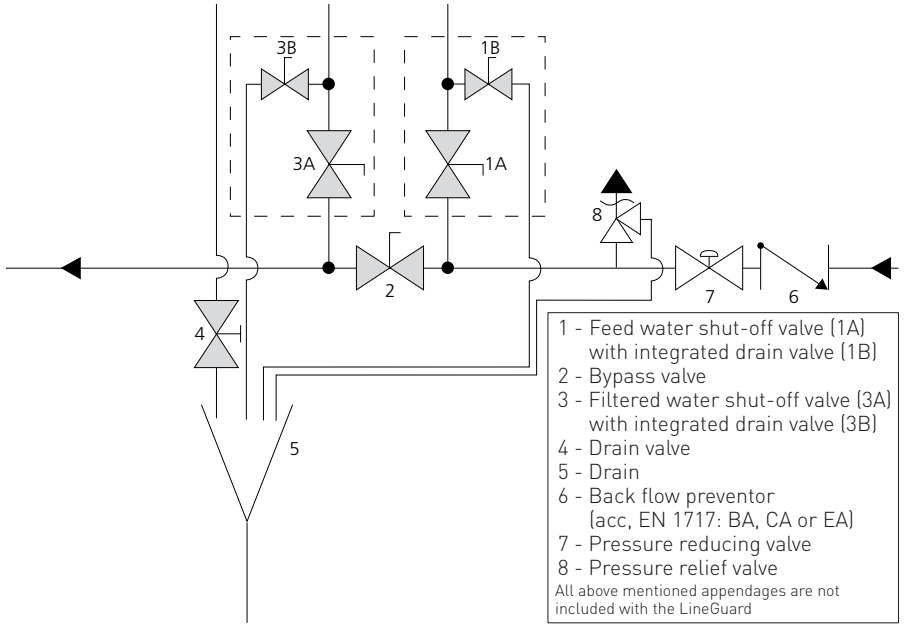


Figure 2: Partial piping schematic

A shut-off valve should be placed directly on both the feed and filtered water pipes of the LineGuard (figure 2, position 1 and 3). A shut-off valve with an integrated drain valve is recommended for ease of installation.
We strongly recommend using a fully integrated controllable check valve (a backflow preventor) at the feed water side. This offers a efficient protection against pollution of the drinking water system.
The maximum system pressure should not exceed 4 bar. In case of potentially higher water pressure, a pressure reducing and relief valve (figure 2, position 7 and 8) must be installed between the main shut-off valve and the LineGuard. The diameter of the drain should at least be two pipe diameters (44 mm or 2 inch). Please note that the capacity of the drain should be large enough to discharge the flow during flushing cycles. A 'rule of thumb' in this: measure the flow of the waterline system without mounting the LineGuard (the maximum flow at this point of the system). The capacity of the drain should at least meet that flow. If this is somehow not possible, we advise you to mount a valve on the drain pipe. You should set this valve during the start-up procedure (see 3.5). Make sure you seal this valve afterwards.

3.3 Electrical connection

The electrical connection to the control unit power supply and the ground/earth connection should be made by qualified personnel.

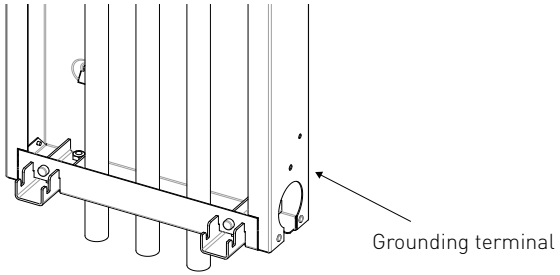


Figure 3: Position of the earth/ground connection

IMPORTANT - Make sure the power supply is not disconnected or disrupted for more than 24 hours. When the LineGuard is without power the cleaning cycles will not be executed, which may lead to a premature reduction in performance.

3.4 Mounting the module(s)

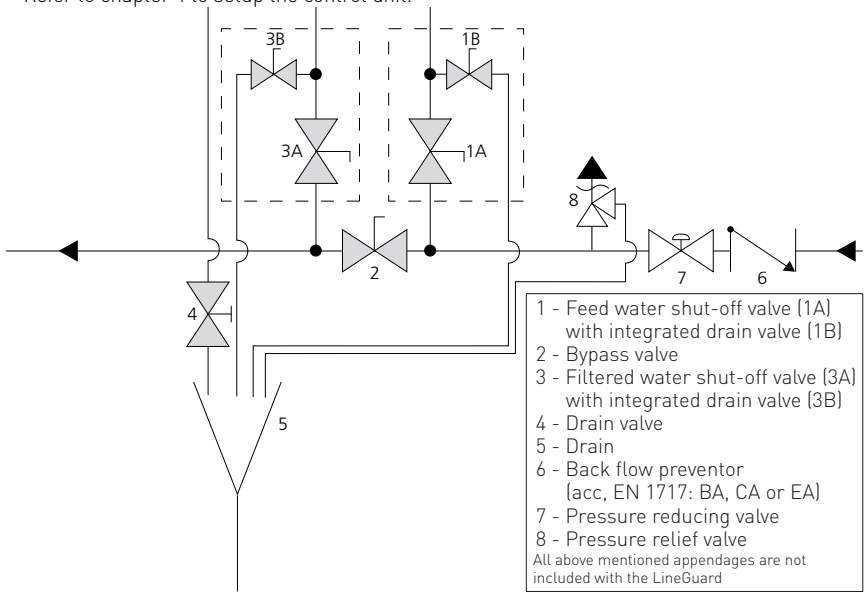
Please follow the steps below in order to mount the modules in the LineGuard.

1. Remove the M6 bolt at the top of the system.
2. Remove the locking strip at the top of the system.
3. Take the module out of the sealed bag.
4. Remove the seal caps from the connector and the valve block
5. Place the module into the bottom bracket.
6. Press the module with the connectors into the valve block.
7. Place the locking strip into place.
8. Place and tighten the M6 bolt to prevent the locking strip from unlocking.

3.5 Start-up procedure

After the LineGuard has been fitted into the waterline a start-up procedure must be carried out. The membranes in the ultrafiltration module are preserved with glycerin, which must be flushed out first. Under no circumstances should the glycerin enter the piping network. Start-up procedure:

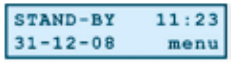
- Close all the shut-off valves (figure 2, position 1A/2/3A).
- Open the drain valve (3B and 4).
- Slowly open the feed water valve (position 1A). The filtration module will now gradually fill with water.
- When water comes out of the drain valve (3B), close the drain valve.
- Run the start-up program (see 4.3.4).
- If the drain capacity is too low, water will come out of the drain opening. Set the drain valve (4) to prevent this from happening. Make sure you seal this valve afterwards.
- After completing the start-up procedure, open the drain port at the filtered water valve (position 3B).
- Allow the water to run for 1 minute from the drain valve.
- Close the drain valve (position 3B).
- Open the filtered water valve (3A).
- The LineGuard is now ready for use.
- Refer to chapter 4 to setup the control unit.



4 CONTROL UNIT SETTINGS

4.1 Operating mode

When in use, the control unit displays the actual mode of the system. In case no water is used the following text appears on the display:



During filtration, the stand-by mode and the flow in l/min are displayed:

During a cleaning cycle, the flushing mode and the action performed is displayed:

Flushing 4:	Forward flushing the left module
Flushing 3:	Forward flushing the right module
Flushing 2:	Backwashing the left module
Flushing 1:	Backwashing the right module

4.2 Info menu

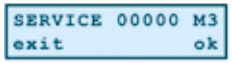
This menu displays information regarding treated volumes, service date and performance. In the operating status menu press menu and then press /\ or \/ until the screen below appears:

4.2.1 Displaying the volumes

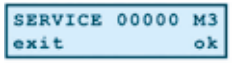
In the info menu press /\ or \/ until the screen below appears:

The total volume of filtered water since the system has been in use is displayed by pressing ***show***

The total volume of water filtered since the last time it was serviced is displayed by pressing ***ok***.



The total volume of filtered water is displayed by pressing ***ok***.

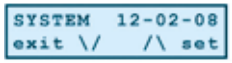


This shows the total volume of filtered water since the last module change date.
Exit the volume menu by pressing ***ok*** or ***exit***

4.2.2 Displaying the service and module date

In the info menu press /\ or \/ until the screen below appears:

The date of the last time the system was serviced is displayed by pressing ***show***.



This date can be changed by pressing ***set***. This should be done after every system service.

The date of the last time the modules were replaced is displayed by pressing \/.

This date can be changed by pressing ***set***. This should be done after every module replacement.

Exit the service info menu by pressing ***exit***.

4.2.3 Displaying the performance

In the info menu press /\ or \/ until the next screen appears:

The performance of the system is displayed by pressing ***show***.

The following data is now displayed:
F = current flow in l/min
J = current flux in l/(m2.h.b)
Pi = pressure at the feed water side in bar
Po = pressure at the filtered water side in bar

4.3 Setup menu

In this menu all the settings of the LineGuard can be defined.
In the operating mode menu press menu and then press /\ or \/ until the next screen appears:

4.3.1 General settings

In this menu, language, clock, date and module specifications can be ***set***. In the setup menu, press /\ or \/ until the screen below appears:

4.3.1.1 Setting the language

In the general settings menu press /\ or \/ until the screen below appears:

The language can be changed by pressing ***set***.
Select the preferred language by pressing the - and + buttons and press ***ok***. Optional languages are English, German and Spanish.

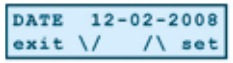
4.3.1.2 Setting the clock

In the general settings menu press /\ or \/ until the screen below appears:

The time on the clock can be ***set*** by pressing ***set***. First ***set*** the hours by pressing the - and + buttons and press ***ok***. Then ***set*** the minutes by pressing the - and + buttons and close by pressing ***ok***.

4.3.1.3 Setting the date

In the general settings menu press /\ or \/ until the screen below appears:

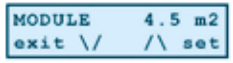


The date can be changed by pressing ***set***.
First ***set*** the days by pressing the - and + buttons and press ***ok***. Then ***set*** the month by pressing the - and + buttons. Finally ***set*** the year by pressing the - and + buttons and close by pressing ***ok***.

4.3.1.4 Setting the module surface area

The surface area of the membrane modules is preset in the factory. This only needs to be changed whenever the modules are replaced with another type.

In the general settings menu press /\ or \/ until the screen below appears:



The surface area can be changed by pressing ***set***. Set the surface area by pressing the - and + buttons and press ***ok***.

4.3.2 Changing the flush settings

In the flush settings menu all the parameters concerning cleaning can be changed.
In the setup menu press /\ or \/ until the screen below appears:

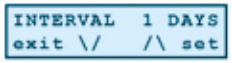
4.3.2.1 Setting the start time

The default start time of the cleaning cycle is 01:00 (1:00 am).
In the flush setting menu press /\ or \/ until the screen below appears:

The start time can be changed by pressing ***set***.
First ***set*** the hours by pressing the - and + buttons and press ***ok***. Then ***set*** the minutes by pressing the - and + buttons and close by pressing ***ok***. In case multiple LineGuards are installed in parallel, the start time of the cycles needs to be ***set*** out-of-phase with a 15 minutes time difference.

4.3.2.2 Setting the cleaning cycle interval

The default cleaning cycle interval is one day. During low usage periods (if little or no water is being used) the interval can be changed to, for example, seven days.
In the flush setting menu press /\ or \/ until the next screen appears:



The interval can be changed by pressing ***set***.
Set the interval by pressing the - and + buttons and press ***ok***.

4.3.2.3 Setting the duration of the forward flush

The forward flush is the duration in seconds the modules are forward flushed.
The default value of the duration of the forward flush is 10 seconds. In case of low quality water the duration should be increased. In the flush setting menu press /\ or \/ until the screen below appears:

The duration of the forward flush can be changed by pressing ***set***.
Set the duration by pressing the - and + buttons and press ***ok***.

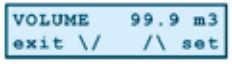
4.3.2.4 Setting the backwash

The default value of the duration of the backwash is 20 seconds. In case of low quality water the duration should be increased. In the flush setting menu press /\ or \/ until the screen below appears:

The back wash duration can be changed by pressing ***set***.
Set the duration by pressing the - and + buttons and press ***ok***.

4.3.2.5 Setting the volume flush

The volume flush is performed whenever a large quantity of water is filtered in between the cleaning cycles. The default value of this volume is 99.9 m3 (26,400 gal). The volume flush overrules the interval period that has been ***set***. In the flush setting menu press /\ or \/ until the screen below appears:



The volume can be changed by pressing ***set***.
Set the volume by pressing the - and + buttons and press ***ok***.

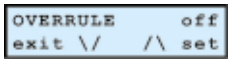
4.3.2.6 Setting the flux flush

The flux flush is performed whenever low quality water is filtered causing a drop in the flux of the modules. The default value of this flux is 100%. This means that a cleaning cycle will be executed when the flux after the last cycle has been decreased by 100%. A suitable value for the flux flush will be between 10 and 20%. The flux flush overrules the interval period that has been ***set***.
In the flush setting menu press /\ or \/ until the screen below appears:

The flux can be changed by pressing ***set***.
Set the flux by pressing the - and + buttons and press ***ok***.

4.3.2.7 Setting an overruling flush

In case multiple LineGuards are installed in parallel, an overruling flush should be ***set***. Please contact your installation company on details for these settings.



4.3.3 Setting the alarm

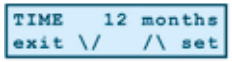
In the alarm settings menu an alarm warning can be ***set*** upon reaching a certain period of time after the service date or upon reaching a certain volume of filtered water or whenever a predefined minimum flux is reached. An alarm warning will be displayed in the control unit. For example:

4.3.3.1 Setting the time alarm

In the operating mode menu press menu and then press /\ or \/ until the screen below appears:

The time alarm will display a message upon reaching a certain period of time after the service date. The default value of the time alarm is 12 months.

In the setup menu press /\ or \/ until the next screen appears:

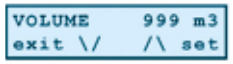


The time can be changed by pressing ***set***.
Set the time by pressing the - and + buttons and press ***ok***.

4.3.3.2 Setting the volume alarm

The volume alarm will display a message upon reaching a certain volume of filtered water. The default value of the volume alarm is 999 m^3 (264,000 gal).

In the setup menu press /\ or \/ until the next screen appears:

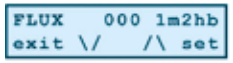


The volume can be changed by pressing ***set***.
Set the volume by pressing the - and + buttons and press ***ok***.

4.3.3.3 Setting the flux alarm

The flux alarm will display a message upon reaching a certain minimum flux. The default value is 000 l/(m^2.h.b).

In the setup menu press /\ or \/ until the next screen appears:



The flux can be changed by pressing ***set***.
Set the flux by pressing the - and + buttons and press ***ok***.

4.3.4 Start-up program

By carrying out the start-up procedure in Section 3.5 the LineGuard will be ready for use. The membranes in the UF module are preserved with glycerin, which must be flushed away first. Under no circumstances should the glycerin enter the network of pipes.
In the setup menu press /\ or \/ until the screen below appears:

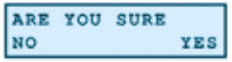
By pressing run, the LineGuard will flush away the glycerin for 8 minutes. This is necessary only once whenever a new membrane module is put into use. After the start-up cycle is complete the control unit will automatically return to the setup menu.

4.3.5 Factory default settings

This setting will return the LineGuard settings to the original factory defaults. Please be aware that all data such as treated volume will be lost!

In the setup menu press /\ or \/ until the screen below appears:

The settings can be reset to factory default values by pressing ***set***. You will be asked to confirm your choice in the screen below that will appear.



Press yes if you are sure you want to reset to factory default values.

5 MAINTENANCE

5.1 General inspection

The following parts should be visually yearly checked for malfunctions scaling, rust or any other visible signs of deterioration.

- Frame
- Magnetic Valves
- Flow Switch
- Pressure Sensors
- Electrical Connection
- Control Unit

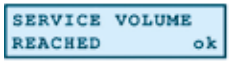
5.2 Testing and replacing the modules

5.2.1 Integrity testing modules

Execute an yearly integrity test according the procedure Integrity test LineGuard.

5.2.2 Timing

The UF modules should be replaced when the system pressure drop becomes too high and the output starts to decrease. This depends largely on the feed water quality and the amount of water used. The service interval should be ***set*** according to this. When the LineGuard needs maintenance, one of the following text messages will appear in the display:



Refer to 4.2.2 for changing the service date.

5.2.3 Draining the system

Before the modules can be replaced the LineGuard needs to be drained of any water resting in the piping of the system. This can be done by following the steps below:

1. Close the feed water shut-off valve (figure 2, position 1A)
2. Close the filtered water shut-off valve (position 3A)
3. Slowly open the feed and filtered water drain valve (position 1B and 3B) and carefully release any pressure left in the system.

5.2.4 Dismounting the used modules

Although the LineGuard has been drained, there will still be some water left inside the modules. Use a bucket to collect this water.

Please follow the steps below to dismount the modules:

1. Loosen and remove the M6 bolt at the top of the module.
2. Remove the locking strip at the top of the module while holding the module to prevent it from falling out of the system.
3. Pull the module out of the valve block and lift the module out of the bracket at the bottom.
4. Place the used module in a plastic bag and seal for transport and storage.

5.2.5 Mounting the module(s)

Before mounting the new modules please make sure that you thoroughly disinfect the module connectors and the valve block openings by spraying them a few times with Norit H2OK Sanitizer Spray.

Please follow the steps below in order to mount the modules in the LineGuard. Before mounting the modules please make sure that these are the correct versions.

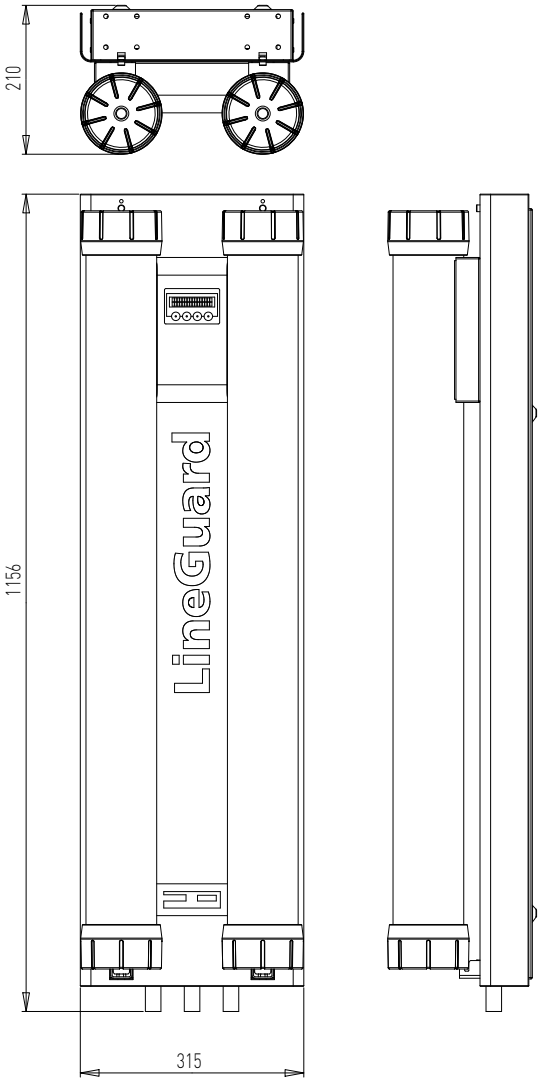
1. Take the module out of the sealed bag.
2. Remove the seal caps from the connector and the valve block.
3. Place the module into the bottom bracket.
4. Press the module with the connectors into the valve block.
5. Place the locking strip into place.
6. Place and tighten the M6 bolt to prevent the locking strip from unlocking.

5.3 Control Unit – optimizing the settings

The LineGuard is automatically ***set*** to perform one flush cycle of 60 seconds at 01:00 a.m. Both time, duration and frequency of these flushes can be adjusted using the control system. The optimal duration and frequency of the flush cycles depends on the water usage and quality. Whenever a lower water quality or high water usage is suspected, we advise increasing the number and the duration of the flush cycles.

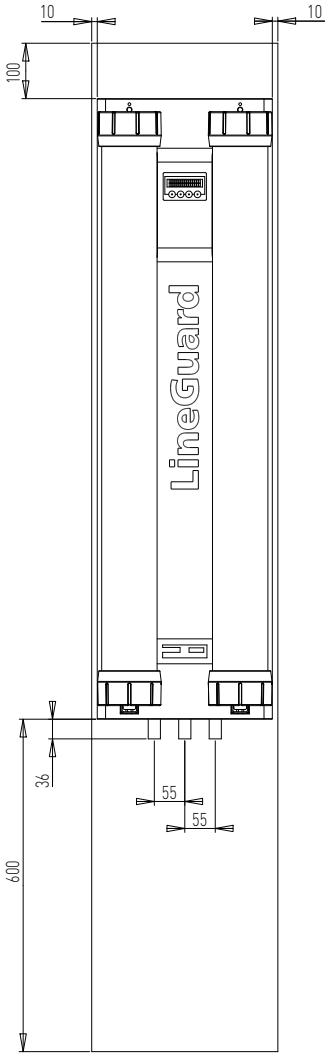
6 DIMENSIONS

All given dimensions are in millimeters

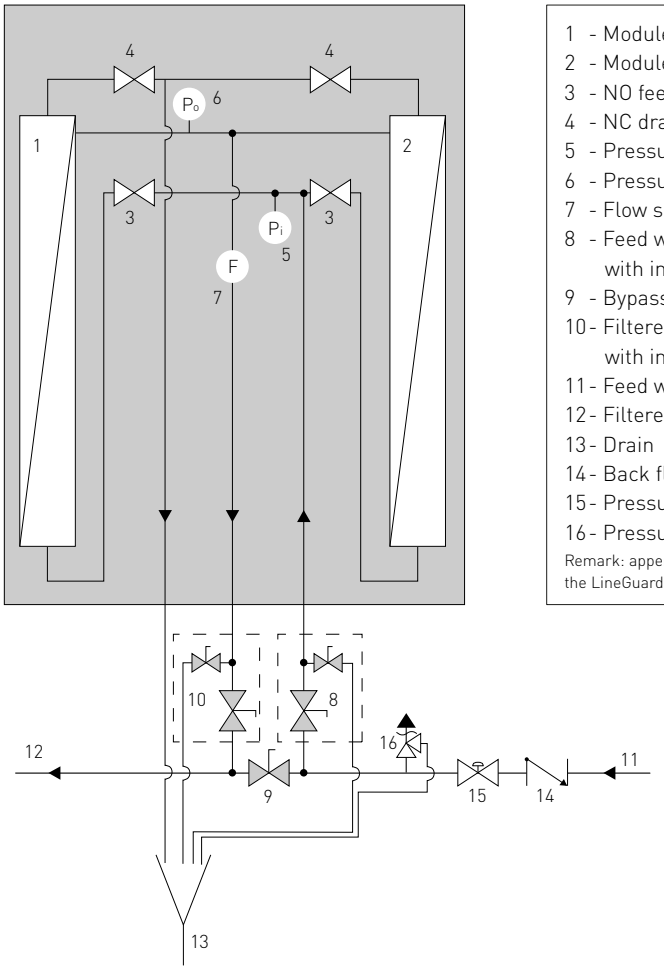


7 CLEARANCES

All given dimensions are in millimeters



8 PIPING SCHEMATICS



1 - Module left
2 - Module right
3 - NO feed water valve
4 - NC drain valve
5 - Pressure sensor feed water
6 - Pressure sensor filtered water
7 - Flow sensor filtered water
8 - Feed water shut-off valve with integrated drain valve
9 - Bypass valve
10 - Filtered water shut-off valve with integrated drain valve
11 - Feed water
12 - Filtered water
13 - Drain
14 - Back flow preventor
15 - Pressure reducing valve
16 - Pressure relief valve

Remark: appendages 8-16 are not included with the LineGuard

9 TECHNICAL INFORMATION

Dimensions
Height: 1156 mm / 45,5 inch
Width: 315 mm / 12,5 inch
Depth: 210 mm / 8,3 inch

Clearance
Bottom: 600 mm / 2 ft
Sides: 10 mm / ½ inch
Top: 100 mm / 4 inch

Weight
Complete: 38 kg / 84 lbs
Without modules: 26 kg / 57 lbs

Electrical Specifications
Control unit voltage: 90 - 264 VAC / 50 – 60 Hz
Power usage: 40 W max
Compliance: CE, UL 429/1310

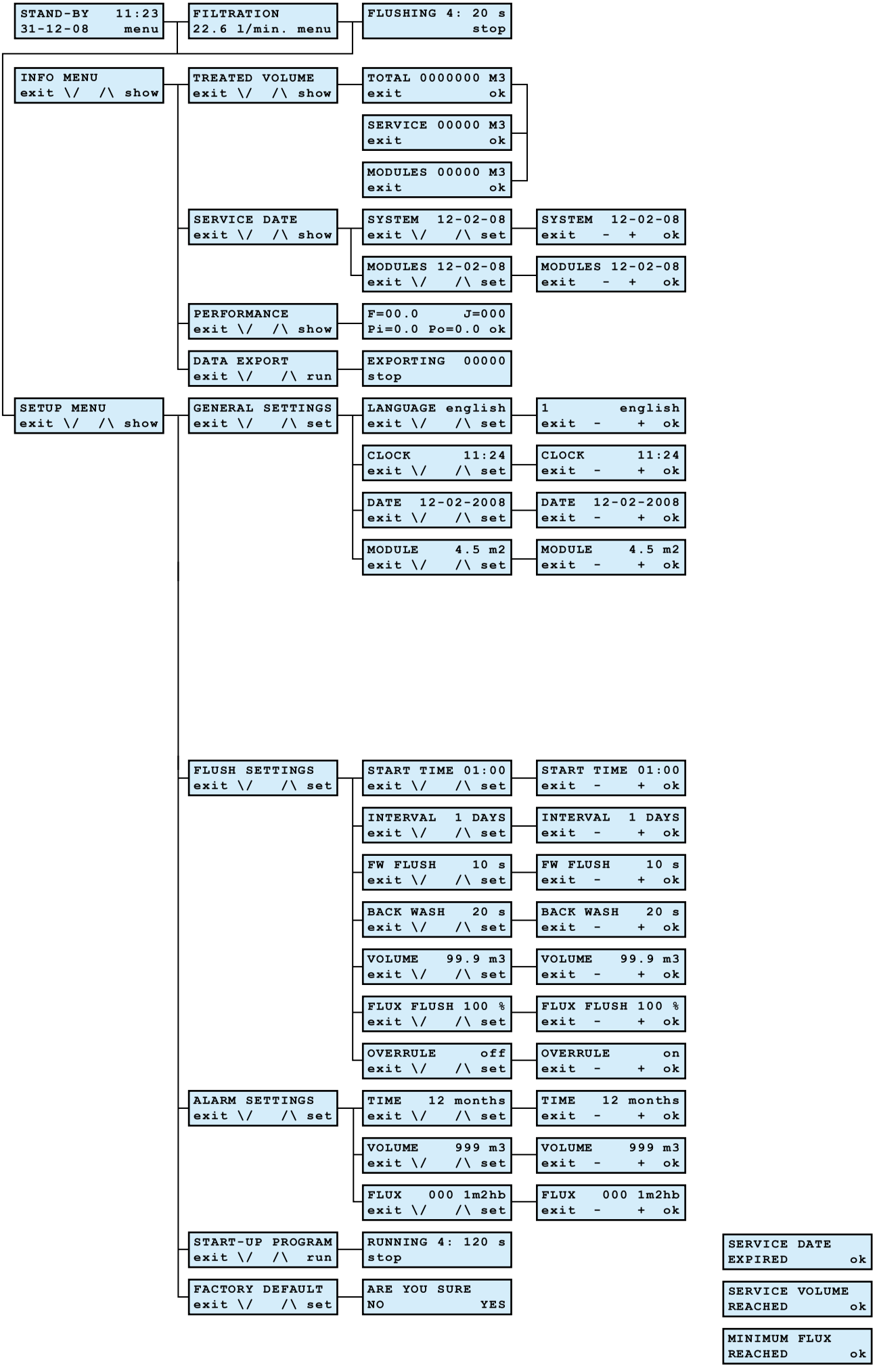
Operating conditions

Maximum operating pressure:	4 bar / 58 psi
Minimum operating temperature:	+1 °C / 34 °F
Maximum operating temperature:	50 °C /122 °F
Minimum storage temperature:	+1 °C /34 °F
Maximum storage temperature:	60 °C /140 °F

Safety
A daily flush cycle is preset at one flush of 30 seconds at 1:00 am. Alarm warnings are preset for one year after the service date or when 999 m^3 (264,000 gal) of water is filtered or whenever a minimum flux of 0 l/(m^2.h) is reached. A backpressure valve should be installed to prevent backward contamination of the water supply.

10 LIMITATION OF WARRANTY AND LIABILITY

X-Flow B.V. represents and warrants for the warranty period of one year that its products are free from substantial defects in materials and workmanship and conform to the specifications. X-Flow's warranties do not cover defects or deficiencies due to or arising from (1) normal wear and tear or improper, abnormal, or negligent handling, operation, maintenance, overloading, or use; (2) tampering, alteration, or repair by buyer or third parties without the prior written consent of X-Flow.
The warranties specifically contained in this section are the only warranties provided and are expressly in lieu of all other warranties, express or implied, including – without limiting the generality of the foregoing - implied warranties of merchantability and fitness for a particular purpose, which are hereby disclaimed. In no event shall X-Flow or its Affiliates be liable for any indirect damages.
X-Flow will repair or replace products that are not in conformity with the warranties as described above. Any complaints about defects in or non-conformity of the products must be submitted by the buyer to X-Flow in writing - specifying the defect or non-conformity in reasonable detail - within ten (10) business days of having received the relevant goods, failing which the right to complain shall lapse, except in respect of defects that the buyer could not reasonably have discovered within this time frame.
The information and data contained in this document are based on our general experience and are believed to be correct. They are given in good faith and are intended to provide a guideline for the selection and use of our products. Since the conditions under which our products may be used are beyond our control, this information does not imply any guarantee of final product performance and we cannot accept any liability with respect to the use of our products.
The quality of our products is guaranteed under our conditions of sale. Existing industrial property rights must be observed.


STAND-BY 11:23
31-12-08 menu
FILTRATION
22.6 l/min. menu
FLUSHING 4: 20 s
stop
INFO MENU
exit \/ /\ show
TREATED VOLUME
exit \/ /\ show
TOTAL 0000000 M3
exit ok
SERVICE 00000 M3
exit ok
MODULES 00000 M3
exit ok
SERVICE DATE
exit \/ /\ show
SYSTEM 12-02-08
exit \/ /\ set
SYSTEM 12-02-08
exit - + ok
MODULES 12-02-08
exit \/ /\ set
MODULES 12-02-08
exit - + ok
PERFORMANCE
exit \/ /\ show
F=00.0 J=000
Pi=0.0 Po=0.0 ok
DATA EXPORT
exit \/ /\ run
EXPORTING 00000
stop
SETUP MENU
exit \/ /\ show
GENERAL SETTINGS
exit \/ /\ set
LANGUAGE english
exit \/ /\ set
1 english
exit - + ok
CLOCK 11:24
exit \/ /\ set
CLOCK 11:24
exit - + ok
DATE 12-02-2008
exit \/ /\ set
DATE 12-02-2008
exit - + ok
MODULE 4.5 m2
exit \/ /\ set
MODULE 4.5 m2
exit - + ok
FLUSH SETTINGS
exit \/ /\ set
START TIME 01:00
exit \/ /\ set
START TIME 01:00
exit - + ok
INTERVAL 1 DAYS
exit \/ /\ set
INTERVAL 1 DAYS
exit - + ok
FW FLUSH 10 s
exit \/ /\ set
FW FLUSH 10 s
exit - + ok
BACK WASH 20 s
exit \/ /\ set
BACK WASH 20 s
exit - + ok
VOLUME 99.9 m3
exit \/ /\ set
VOLUME 99.9 m3
exit - + ok
FLUX FLUSH 100 %
exit \/ /\ set
FLUX FLUSH 100 %
exit - + ok
OVERRULE off
exit \/ /\ set
OVERRULE on
exit - + ok
ALARM SETTINGS
exit \/ /\ set
TIME 12 months
exit \/ /\ set
TIME 12 months
exit - + ok
VOLUME 999 m3
exit \/ /\ set
VOLUME 999 m3
exit - + ok
FLUX 000 1m2hb
exit \/ /\ set
FLUX 000 1m2hb
exit - + ok
START-UP PROGRAM
exit \/ /\ run
RUNNING 4: 120 s
stop
FACTORY DEFAULT
exit \/ /\ set
ARE YOU SURE
NO YES
SERVICE DATE
EXPIRED ok
SERVICE VOLUME
REACHED ok
MINIMUM FLUX
REACHED ok