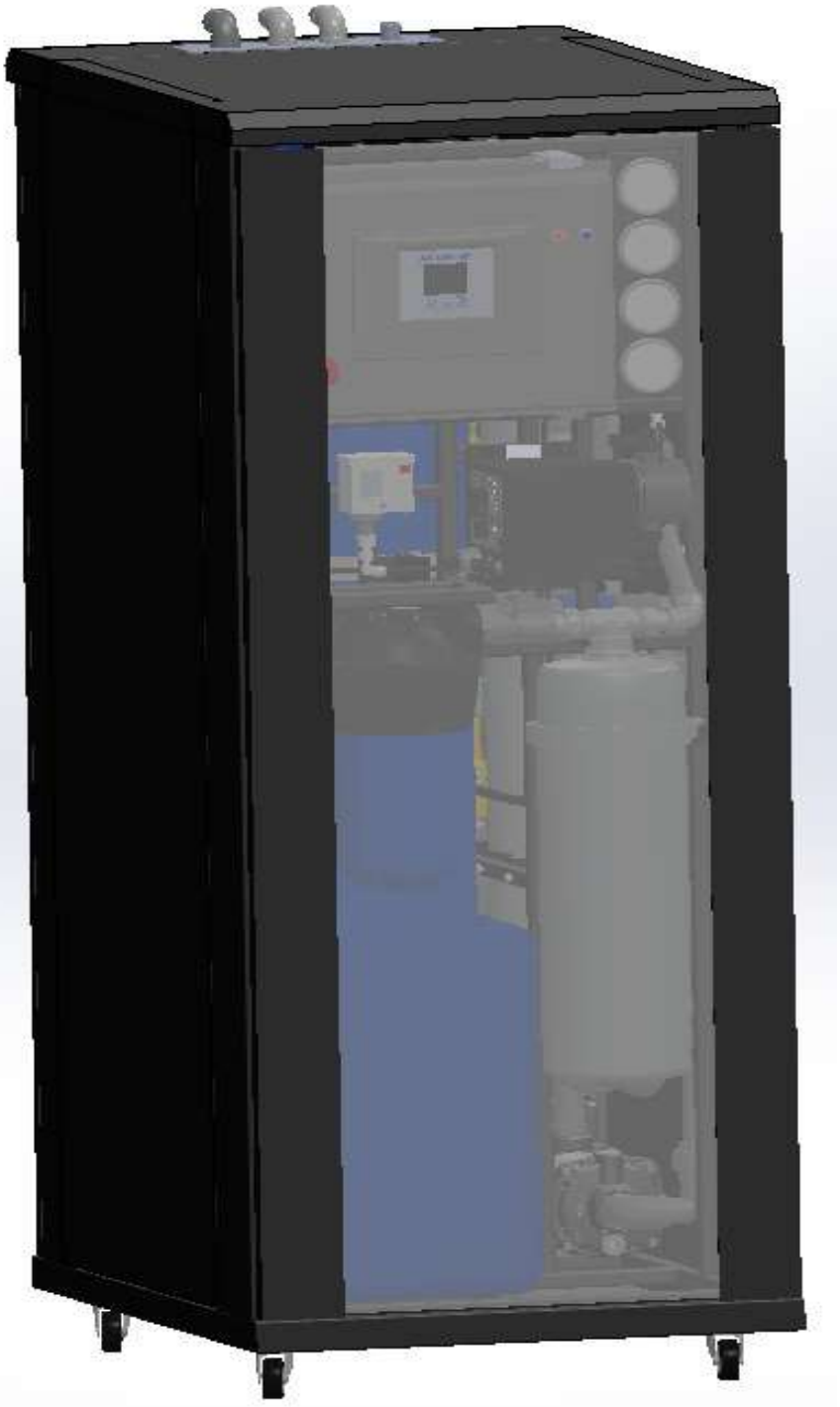


AQUAPHOR
PROFESSIONAL

APRO-HP-500-DI

WATER PURIFICATION SYSTEM

AQUAPHOR PROFESSIONAL

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1 SAFETY

Content

This manual contains the most important pointers regarding a safe installation, commissioning, use, check, and maintenance of the unit and its equipment.

Target group

This manual has been written with the intention to be read, understood, and completely considered by everyone responsible for the activation, monitoring, care, check, and maintenance.

Symbols

The following symbols are used in this manual:

DANGER
Denotes a direct threat of danger. Not observing this pointer may be life-threatening or lead to serious injuries.

WARNING
Denotes a possibly dangerous situation. Not observing this pointer may be life threatening or lead to serious injuries.

CAUTION
Denotes a possibly dangerous situation. Not observing this pointer can cause minor injuries.

ATTENTION
Denotes a possibly dangerous situation. Not observing this pointer can cause material damage.

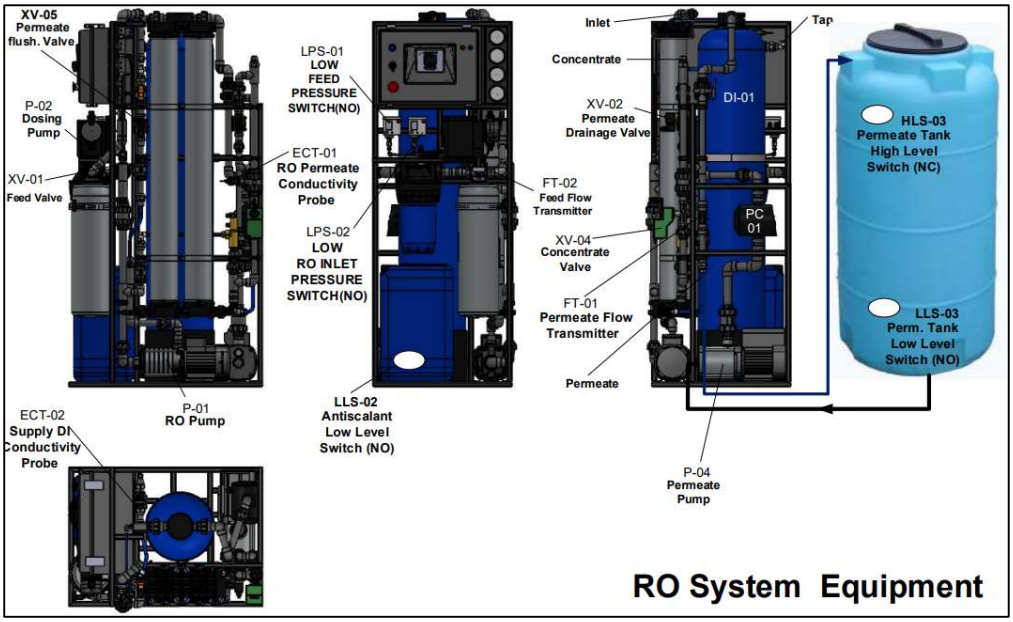
INFORMATION
Denotes application pointers and other useful information.

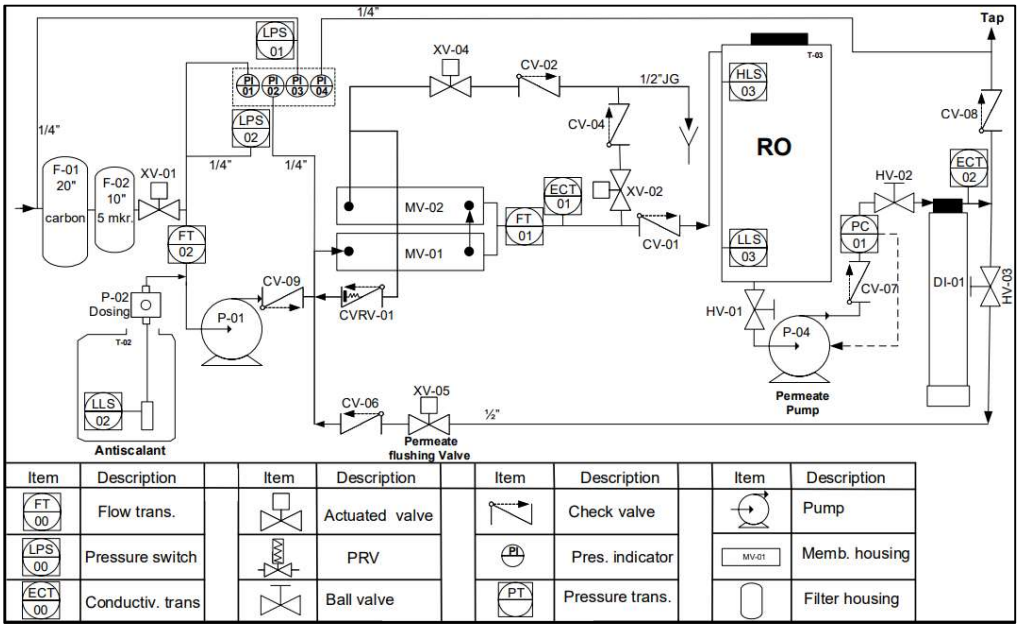
2. SYSTEM OVERVIEW

2.1 PRODUCT DESCRIPTION

The APRO-HP-500-DI-cabinet is a professional reverse osmosis water purification system that provides water with a conductivity < 5 µS (microsiemens). In this system, water passes through a carbon cartridge that removes chlorine, sediment, volatile organic compounds, taste, and odor. Then water passes through the 5-micron cartridge, which filters out all particles larger than 5 microns. A metering pump injects antiscalant solution to the prefiltered water to prevent scaling. Then water goes through the reverse osmosis membrane removing 93-99% of salts. The RO permeate is collected through the permeate tank. The supply pump delivers deionized water to the consumer by passing through the mix-bed western (DI), removing up to 99.99% of salts.

2.2 ELEMENTS OF APRO-HP-500-DI-CABINET





Item	Description	Item	Description	Item	Description	Item	Description
FT 00	Flow trans.		Actuated valve		Check valve		Pump
LPS 00	Pressure switch		PRV	PI	Pres. indicator	MV-01	Memb. housing
ECT 00	Conductiv. trans		Ball valve	PT	Pressure trans.		Filter housing

Indicator	Name	Function
LLS-02	Water level sensor	Low-level sensor in reverse osmosis water tank serves to protect the pump P-04 from the dry running.
PTS-01	Pretreatement system	The system registers and signals when switching to the pre-filtration unit flushing mode (sand / carbon filters and / or UF). Optional.
T-02	Antiscalant tank	Antiscalant tank.
P-02	Dosing pump	Adds antiscalant to the RO water before feeding it to the reverse osmosis system.
LLS-02	Antiscalant level sensor pre-treatment system	Antiscalant level sensor. Protects the osmosis system from working without antiscalant.
LPS-01	Low pressure sensor	Low-pressure sensor in the supply line. Protects the system from dry running in case of interruption of the water supply.
LPS-02	Low pressure sensor	Low-pressure sensor at the RO inlet. Protects the system from dry running in case of failure of XV-01 or depletion of the cartridge resource.
P-01	RO boosting pump	Builds up pressure and supply water to reverse osmosis membranes.
FT-02	Flow sensor	Inlet water flow sensor.
FT-01	Flow sensor	Permeate line flow sensor.
XV-01	Actuated valve	The valve for supplying raw water to the reverse osmosis system.
XV-02	Actuated valve	First permeate drainage.
ECT-01	Electric conductivity sensor	Reverse osmosis permeate conductivity sensor.
HLS-03	High water level sensor	High-level sensor in permeate tank RO, serves to stop the osmosis system in case of filling the tank with RO permeate.
LLS-03	Low water level sensor	Low-level sensor in product tank RO serves to protect the pump HP-04 from dry running.
T-03	Product tank RO	RO permeate storage tank.
P-04	Supply pump	Serves to supply RO permeate.
XV-05	Actuated valve	Membrane permeate flushing valve.
PCP-02	Pump Pressure Control	Controls pump pressure.

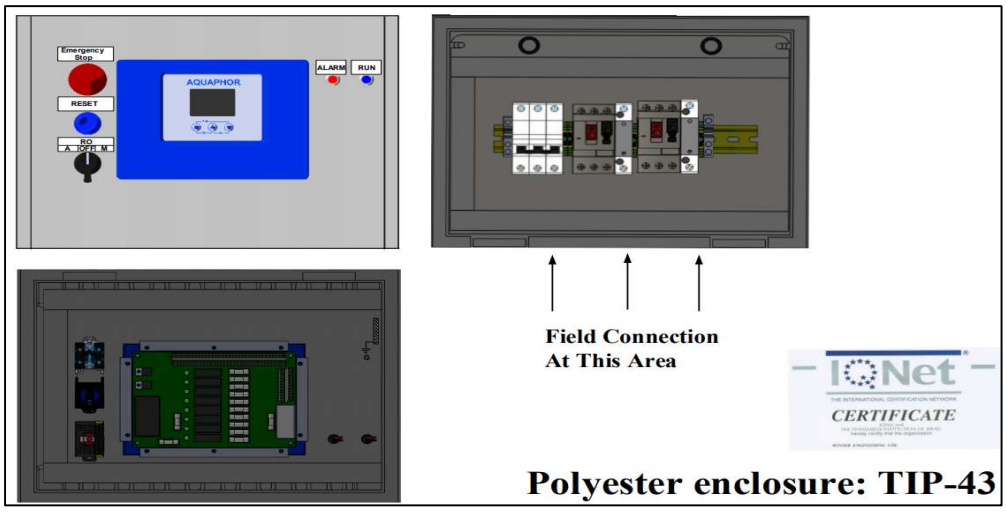
3. ELECTRIC CIRCUITES

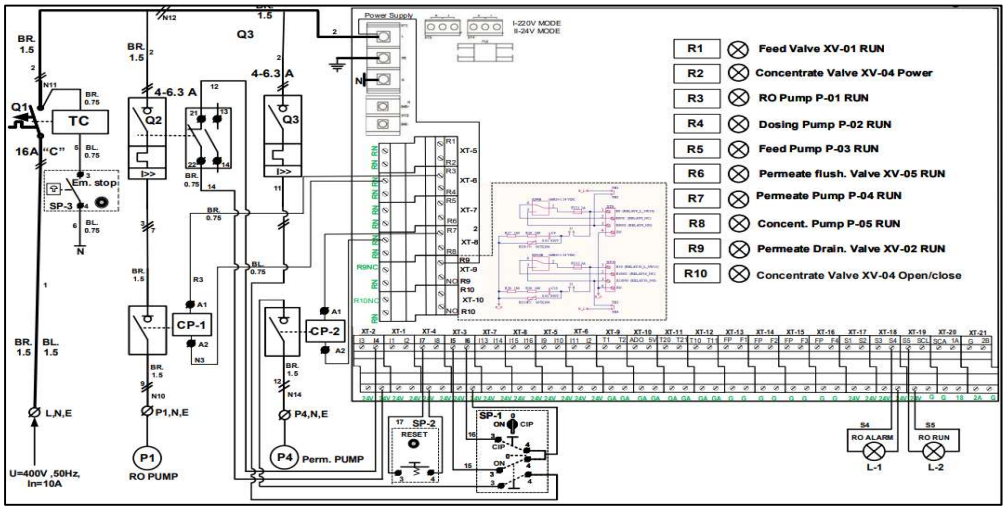
3.1 GENERAL INFORMATION

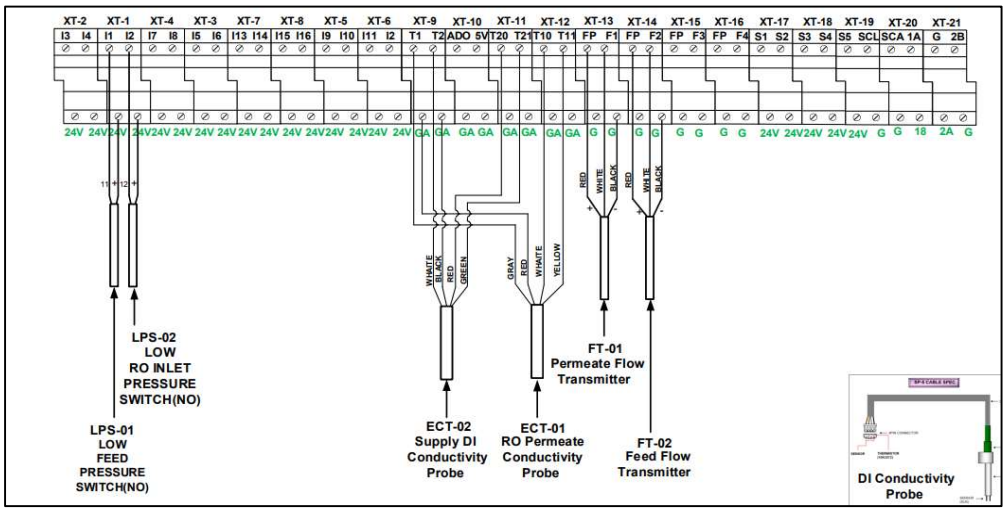
- All elements of the electrical circuit are assembled and require no additional intervention except for the connection of additional equipment. The unit is equipped with fully automated control. It can supply purified water using the logic controller, water level, and pressure sensors, based on an adjustable algorithm, standardized for the reverse osmosis systems manufactured by Aquaphor.
- The controller program works as part of the AFE-002-000 electronic complex and controls the reverse osmosis systems of various APRO configurations.

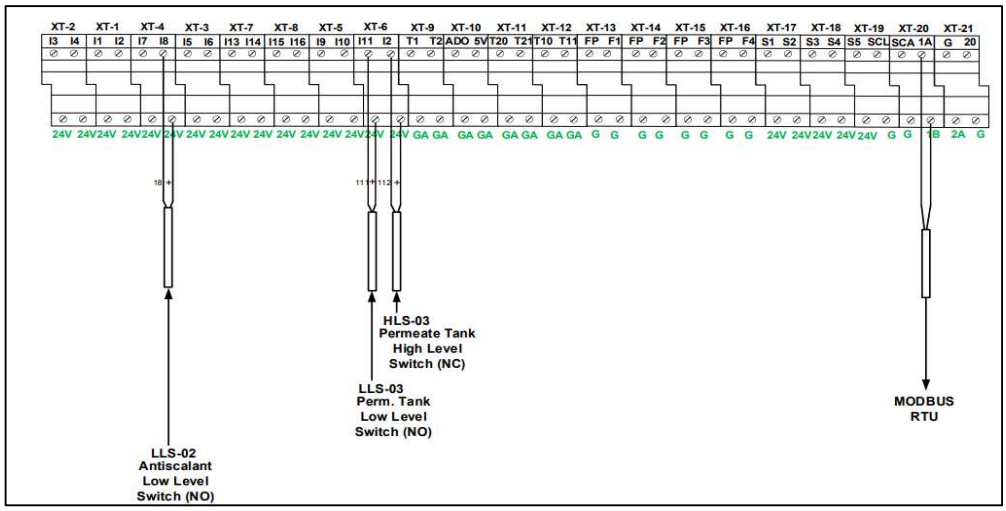
! The connection of auxiliary equipment must be carried out by certified specialists with the appropriate knowledge, skills, and experience working on this equipment. The manual setting of additional installation modes is possible only with the help of the switchboard and controller.

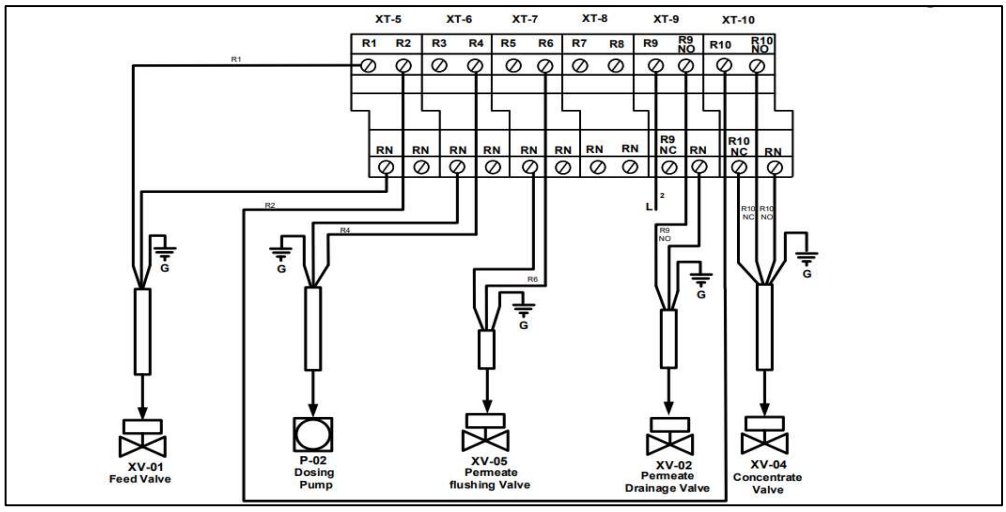
3.2 ELECTRIC CIRCUIT SCHEMES






LPS-01
LOW
FEED
PRESSURE
SWITCH(NO)
LPS-02
LOW
RO INLET
PRESSURE
SWITCH(NO)
ECT-02
Supply DI
Conductivity
Probe
ECT-01
RO Permeate
Conductivity
Probe
FT-01
Permeate Flow
Transmitter
FT-02
Feed Flow
Transmitter
DI Conductivity
Probe


LLS-02
Antiscalant
Low Level
Switch (NO)
HLS-03
Permeate Tank
High Level
Switch (NC)
LLS-03
Perm. Tank
Low Level
Switch (NO)
MODBUS
RTU

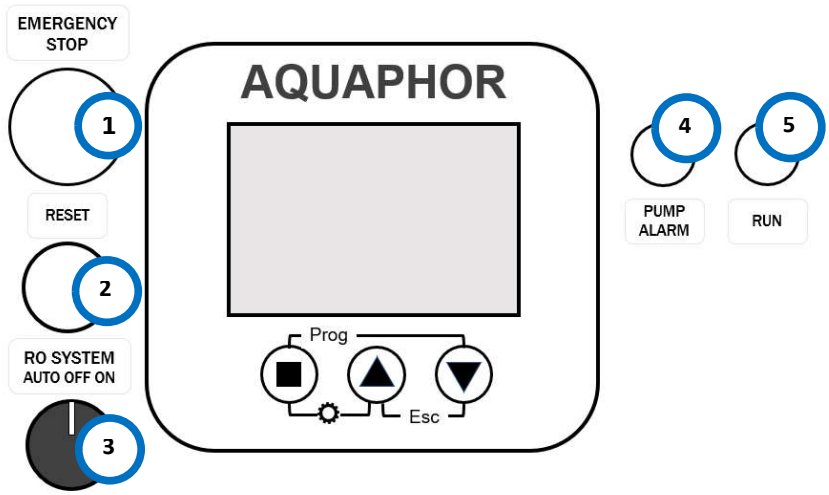

XV-01
Feed Valve
P-02
Dosing
Pump
XV-05
Permeate
flushing Valve
XV-02
Permeate
Drainage Valve
XV-04
Concentrate
Valve

4. CONTROL PANEL

4.1 GENERAL INFORMATION

- The controller is protected by an osmosis control panel with IP-55 standard class and higher.
- The system nodes are controlled through the power board.
- The commutation of the controller and the power board is realized through quick-detachable connections.

4.2 ELEMENTS ON THE CONTROL PANEL



№	ELEMENT	FUNCTION
1	«**Emergency stop**» button	Emergency shutdown of the system. When pressed, it is fixed in a closed state and with its contacts blocks the power part of the installation, thereby completely de-energizing the *controller*.
2	«**Reset**» button	Resetting the current program (return to the start window SYSTEM OFF).
3	«**RO system**» mode switcher	**OFF** - Standby mode **AUTO** - Automatic mode **CIP** - Service Mode
4	«**Alarm**» lamp indicator	Emergency situation
5	«**Run**» lamp indicator	The unit operates normally

5. TECHNICAL DATA DESCRIPTION

5.1 REQUIREMENTS ON SITE

5.1.1 WATER QUALITY

Designation	Unit	Value
Water supply for the reverse osmosis system		
Temperature	°C	5 - 30
Turbidity factor	NTU	<1
Blocking factor (sludge / index of sedimentation density)	SDI	<3
Flow pressure	bar	2.5 - 6
Salinity	mg/l	<1000
Total hardness	°dH	0 - 15
pH under constant operation	-	6.5 - 9
Short term for the rinse	-	1 - 12
Odour	-	odourless
Oil	mg/l	0
Free chlorine	mg/l	0
Iron	mg/l	<0.1
Manganese	mg/l	<0.1
Sewage		according to local regulations

5.1.2 INSTALLATION ROOMS

Designation	Unit	Value
Temperature	°C	5 to 40
Lighting	lx	at least 150
Source of fresh air	-	aerate and deaerate sufficiently

5.1.3 REVERSE OSMOSIS DATA

Designation	Unit	Value
Permeate		
With 25 °C	l/h	500
With 15 °C	l/h	380
Operating pressure max.	bar	9
Power	kW	1.3
Booster pump	kW	0.65
Control	W	10
Connections		
Raw water	NW	1’’
Concentrate	NW	½’’
Permeate	NW	½’’
Pressure fluctuations max.	bar	± 1
RO salt retention rate max.	%	90 - 95
Operating temperature	°C	30 - 40
Surrounding temperature	°C	4 - 40
Electric connection		EU plug
Connection	-	1/N/PE
Voltage	V	230
Frequency	Hz	50
Power	kW	1.2
Nominal current	A	10

6. INSTALLATION

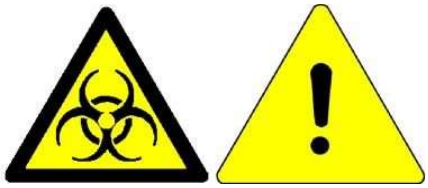
6.1 SAFETY POINTERS

DANGER: Danger for life, Electric shock

- Turn OFF the main switch and avoid its reactivation.
- Let only the competent staff carry out the electric work.
- Ensure the absence of power before starting to work.
- Consider the national regulations, the safety ones, and if available, the factory prescriptions.

WARNING: Dangerous tasks

- Ensure that only specially trained personnel carries out the tasks.
- Ensure that the laws, regulations, and directives applicable to the site of use are fulfilled.
- Before beginning the tasks, ensure that the air and water systems are pressureless.
- Ensure that the tasks are carried out with suitable tools only.
- Ensure the use of adequate climbing aids and protective measures before working at height to prevent a fall.
- Ensure that the safety data sheets of the auxiliary and operating materials used are fulfilled.
- Ensure the use of personal protective equipment (helmet, non-skid safety shoes, safety goggles, ear protectors, gloves, etc.)
- Consider stumbling and spraining areas.
- Avoid slip hazard.
- Provide sufficient lighting.
- Provide sufficient aeration.
- In case of danger, actuate the emergency-stop switching device.



CAUTION : Possible contamination of the washing water / air; Infections and diarrhea

- Wear personal protective equipment (waterproof clothing, boots, gloves and breathing protection (e.g. particle filtering half-mask).
- Avoid any contact with washing water and spray mist.
- Provide sufficient aeration.

6.2 GENERAL POINTERS

ATTENTION: Contamination of the unit coming from the drain, Blocking of the module

- Do not lead the concentrate line directly in the drain, but fasten it approx. 10 - 15 cm over the drain with appropriate means.

ATTENTION: Corrosion; Destruction of the lines

- Use corrosion-resistant material for all the water lines

6.3 WATER CONNECTION

Install a pressure resistant hose between the outlet of the softening installation (if used) and the raw water connection of the reverse osmosis unit.

ATTENTION: Contamination of the unit coming from the drain, Blocking of the module

- Do not lead the concentrate line directly in the drain, but fasten it approx. 10 - 35 cm over the drain with appropriate means.

INSTALLATION

Concentrate connection

- Install a hose between the concentrate outlet of the reverse osmosis unit and the sewer junction and let it hang 10 to 35 cm over the drain, to prevent the contamination of the unit.

Permeate connection

- Install a hose temporarily between the outlet for permeate of the reverse osmosis unit and the sewer junction (for primary flushing of the system).

7. CONFIGURATION

APRO-HP-500-DI cabinet system can be configured in two ways:

- By using the three-button keyboard of the controller.
- By using the APRO Monitor application on the screen of a mobile device.

7.1 CONFIGURATION VIA CONTROLLER KEYBOARD

STARTING WINDOW

When power is applied to the switchboard, the program starts in the System OFF mode, opening the start window with the following parameters:

1. The current time and date
2. The name of the program
3. The name of the production
4. The possibility of starting the system infiltration mode
5. The position of the three-position switch
6. Errors that prevent the installation from starting infiltration mode
7. The serial number of the board
8. The program version
9. The availability of Wi-Fi

In the start window, you can perform the following operations:

- Switching using a three-position hereinafter switch to the "ON" position. The system will enter the filtering mode through the "Start-Up" mode.
- Switching the switch to the "CIP" position. The system will enter the state of chemical flushing system elements.
- Pressing the "OK" button on the three-position switch for 2 seconds will turn on the system statistics window for 4 seconds (the function is convenient for defining service intervals).
- Pressing the "Up" button on the three-position switch for 5 seconds will start the calibration routine of the TDS (Total Dissolved Solids) sensors.
- Pressing the "OK" and "Down" buttons on the three-position switch simultaneously will start the subroutine for configuring system devices.

If the starting parameters meet the system's requirements, then an indication of the system operation will be displayed on the controller screen:

7.2 STARTING

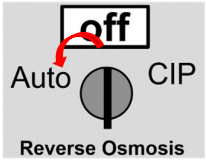
7.2.1 CONNECTION

CAUTION: It is recommended to use eyes and hands protection while unpacking the system.

1. Unpack the system and place it to the permanent place of work. Place the wheels to “Stop” position.
2. Place RO permeate tank to the permanent place of work.
3. Connect the semi-clear pipe to the permeate pump (P-04). Clamp the fixing band with a screwdriver.
4. Connect blue ½ JG pipe to the permeate outlet.
5. Connect LLS-03 and HLS-03 cables to the junction box.
6. Connect the concentrate line to the drainage.
7. Connect tap connector to the supply line.
8. Connect the inlet connection to the raw water supply.
9. Connect the electricity plug to ~220 V.
10. Connect the dosing suction pipe to the antiscalant tank.
11. Check the PI-01 pressure indicator. The normal pressure is 2-5 Bar.
12. Before starting work, move RO switcher to the AUTO position.
13. System is ready.

7.2.2 HARDWARE SETUP

1. Move the switcher to AUTO position to start.



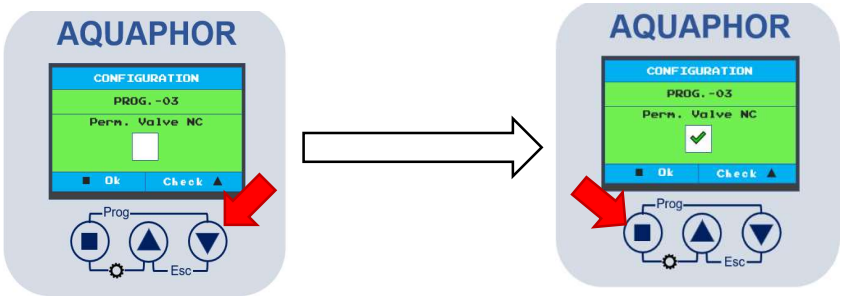
2. Perform dosing pump degassing (**Maintenance, 10.1**).
3. Make sure there is no leakage.
4. Check all the setups and programs (**7.3, 7.4**).
5. Whenever the low level sensor is off, is recommended perform P-04 deaeration (**Maintenance, 10.1**).

7.2.3 SOFTWARE SETUP

1. To enter the settings menu, use the controller's three-button keyboard located under the monitor screen.

2. To open **Configuration** menu, press the OK ■ and DOWN ▼ buttons.

3. If you want to add or exclude an element from the system, press the UP ▲ button. By pressing the OK ■ button, we confirm the selection and proceed to the next element of the system.



7.3 PROGRAMS

PROGRAM 01: FEED PUMP (XV-01)

If the input water does not meet the requirements of this manual for the minimum pressure and required volume, the system can be connected to the existing water supply through the raw water supply system.
For this program, a pump for raw water should be added. By default, a storage tank with raw water is also added.

The raw water pump works under the following conditions:

- The program is activated
- The three-position switch is in the "ON" position
- There is enough water in the storage tank.
- There is a signal from the RO system to start work

PROGRAM 02: PRETREATMENT (PTS-01)

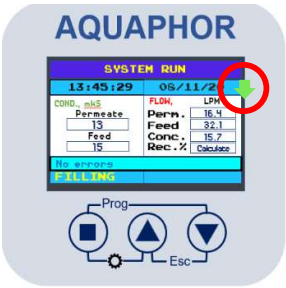
This program turns on the water pretreatment process.

The pretreatment system (PTS-01) will carry out the regeneration according to a given program, and the results will be displayed on the controller screen. During this period, the RO system will not work.

The time of the pretreatment regeneration does not depend on the controller settings. When the pretreatment regeneration mode is activated, all RO system units turn OFF, and the raw water feed pump turns on. After finishing the regeneration process, the system continues to work automatically.

PROGRAM 03: PERMEATE VALVE NC (XV-02)

Presence of a primary permeate drainage valve (XV-02). The valve turns on when the set value of the product electrical conductivity is exceeded.



During the system operation, the drainage valve opening symbol will be displayed on the controller during the frequency reset (the green arrow indicator should be in the right upper corner).

PROGRAM 04: SUPPLY PUMP (P-04)

If there is a need to quickly supply a large volume of purified water quickly, a non-pressurized RO water supply system can be connected (P-04). The reverse osmosis system will fill the additional tank with RO water to the specified level.

PROGRAM 05: PERMEATE FLOW TRANSMITTER (FT-01)

Activates permeate flow transmitter (FT-01).

PROGRAM 06: FEED FLOW TRANSMITTER (FT-02)

Enables/disables feed flow transmitter (FT-02).

PROGRAM 07: HIGH PRESS. SW. (HPS-01)

Enables/disables high pressure switch (HPS-01).

PROGRAM 08: PERMEATE FLUSH (XV-05)

The presence of a valve for permeate flushing of membranes (XV-05).

PROGRAM 09: PULSE DOSING (P-02)

Activates pulse dosing control. (P-02).

PROGRAM 10: DOSING LEVEL SW. (LLS-02)

Enables/disables low antiscalant level switch.

PROGRAM 12: DOUBLE PUMP RO (P-04)

Activates concentrate recirculation pump (P-04).

PROGRAM 13: RO CONDUCTIVITY (ECT-01)

Enables RO permeate conductivity sensor (ECT-01).

PROGRAM 14: DI CONDUCTIVITY (ECT-02)

Enables DI conductivity (ECT-02).

PROGRAM 15: CONDUCT. SM/PPM (OPTIONAL)

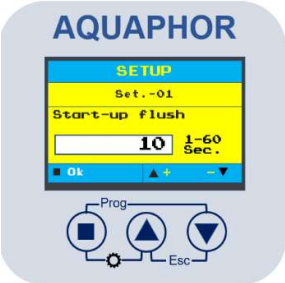
Changing the conductivity value units from siemens to PPM (Parts per Million).

PROGRAM 16: (LPM/GPM – C/F)

Changing the units from Liters and Celsius to Gallons and Fahrenheit.

7.4 SETUPS

SETUP 01: START-UP FLUSH



Setting the start-up flush time.

SETUP 02: SHUT-DOWN FLUSH

Setting the shut-down flush time.

SETUP 03: STAND-BY FLUSH

Setting the stand-by flush time.

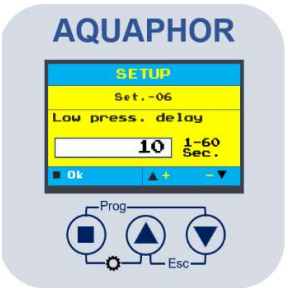
SETUP 04: HIGH CONDUCTIVITY RO WATER ALARM

Setting the maximum value for the product conductivity limit.

SETUP 05: HIGH CONDUCTIVITY DI WATER ALARM

Setting the maximum value for the DI conductivity limit.

SETUP 06: LOW PRESS. DELAY



Setting the time to stop the system after a signal of low input pressure is received.

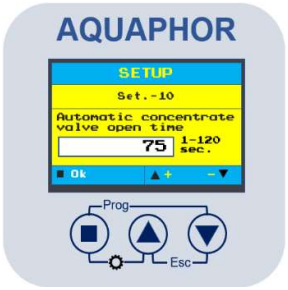
SETUP 08: PERM. FLOW 'K'

The number of pulses per liter.

SETUP 09: FEED FLOW 'K'

The number of pulses per liter.

SETUP 10: AUTOMATIC CONCENTRATE VALVE OPEN TIME

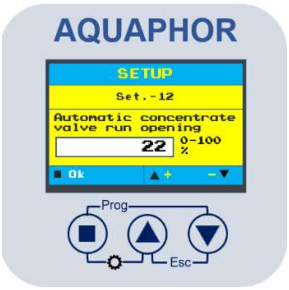


Full opening/closing time of the automatic concentrate valve (the number is indicated in the valve manufacturer's passport).

SETUP 11: AUTOMATIC CONCENTRATE VALVE FLUSH OPENING

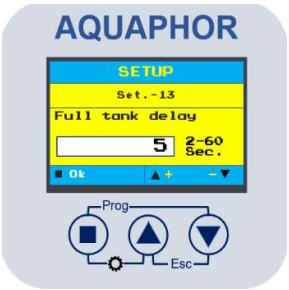
The percentage of the concentrate valve opening for flushing process.

SETUP 12: AUTOMATIC CONCENTRATE VALVE RUN OPENING



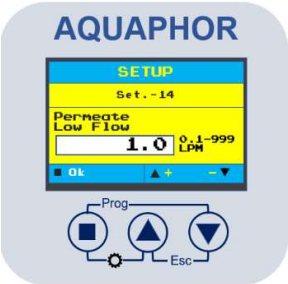
The percentage by which the concentrate valve opening for the concentrate flow for a given value. The concentrate flow provides the necessary concentrate recovery.

SETUP 13: HIGH LIQUID LEVEL PERMEATE TANK DELAY



Setting the waiting time for flushing the system after receiving a signal that the tank water level is high.

SETUP 14: PERMEATE LOW FLOW

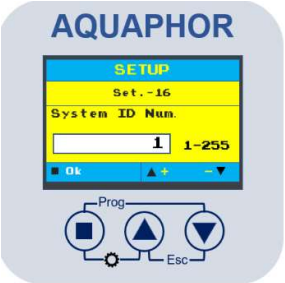


Setting the minimum permeate flow.

SETUP 15: CONCENTRATE LOW FLOW

Setting the minimum concentrate flow.

SETUP 16: SYSTEM ID NUMBER



Setting the system version (1-255).

SETUP 17: YEAR

Setting the year (18-50).

SETUP 18: DATE/MONTH

Setting the date (DD:MM).

SETUP 19: TIME

Setting the time (hh:mm).

8. ALARMS AND TROUBLESHOOTING

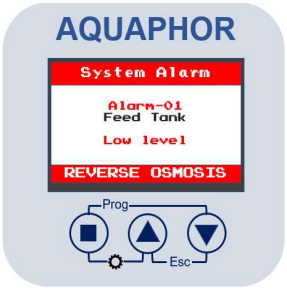
If there is any critical error in operation, the system is switched to the "Alarm" error mode. The "Alarm" window contains information about:

- the name(s) of critical error(s)
- the number of critical errors
- the time until the next attempt to restore the system

To enter the standby state and return to the start window, move the switch to the OFF position. In case of self-elimination of minor errors, the program switches the system through the "Start-Up" mode to the filtering mode.

8.1 LOW LEVEL IN THE RAW WATER TANK

The error occurs when **the level in the raw water tank T-01 is low**. The option is activated if there is no signal from the LLS-01 low water level sensor in the source water tank T-01 for 10 seconds.



Solution: The error is solved when the signal from the low water level sensor is received. Otherwise, check RO water supply and LLS-01 functionality.

8.2 PRETREATMENT SYSTEM ERROR

The error occurs when **the pre-filtration system is in the PTS-01 regeneration mode for more than three hours**.

Solution: Check the functionality of pretreatment equipment, RO system controller cable, and pretreatment system controller.

8.3 ANTISCALANT TANK LOW LEVEL

The error occurs when **there is no signal from the LLS-02 low level sensor in the antiscalant T-02 tank for 10 seconds.**

Solution: The error is solved when the signal from the low water level sensor is received. Otherwise, check the presence of antiscalant and sensor functionality.
! **After antiscalant replacement, it is required to perform dosing pump degassing**. (**Maintenance, 10.1**).

8.4 RAW WATER LOW PRESSURE

The error occurs when **there is no signal from the LPS-01 low pressure sensor in the supply line for a specified time (Setup. -06).** In this case, the raw water pump is activated, the pre-treatment system is activated, and it is not in regeneration mode. After a problem occurs, the system will try to restart. If the problem persists, the osmosis system will stop until the problem is resolved.

Solution: The error can be fixed manually by pressing the reset button or by the automatic resetting every hour. Otherwise, check RO water supply and LPS-01 functionality.

8.5 LOW INLET PRESSURE

The error occurs when **there is no signal from the LPS-02 low pressure sensor in the water supply line to the RO system for a specified time (Setup-06).** In this case, the RO water supply valve to the RO XV-01 system is open; the RO water supply pump is activated. The pretreatment system is activated and is not in regeneration. After a problem occurs, the system will try to restart. If the problem persists, the osmosis system will stop until the problem is resolved.

Solution: The error can be fixed manually by pressing the reset button or by automatic reset every hour. Otherwise, check the functionality of RO water supply, LPS-02, XV-01. Change cartridges (**Maintenance, 10.4**).

8.6 HIGH INLET PRESSURE TO RO MEMBRANE UNIT

The error occurs when the osmosis pump is in process, and **there is no signal from the HPS-02 high-pressure sensor at the membrane inlet for 10 seconds**. After a problem occurs, the system will try to restart it again. If the problem persists, the osmosis system will stop until the problem is resolved.

Solution: The error can be fixed manually by pressing the reset button or by automatic reset every three hours. Perform CIP or change the membrane, check HPS-02 functionality.

8.7 RO PUMP OVERLOAD

The error occurs when **a signal is received from the thermal protection of the pump motor of the RO system P-01.**

Solution: Check RO pump P-01 and overload 1 functionality.

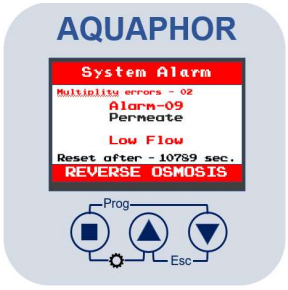
8.8 HIGH ELECTRICAL CONDUCTIVITY OF PERMEATE

The error occurs when the pump of the RO system P-02 is working, the system is not in flushing mode or CIP, and **the conductivity value of the RO system product is bigger than the set value** (Setup-04) **for 5 minutes.** After a problem occurs, the system will try to restart it again. If the problem persists, the osmosis system will stop until the problem is resolved.

Solution: The error can be fixed manually by pressing the reset button or by automatic reset every three hours. Perform PCP-01 calibration, perform CIP, or change the membrane.

8.9 MINIMUM VALUE OF PERMEATE FLOW

The error occurs when the pump of the RO P-01 system is working and **the osmosis system permeate flow value is less than the set value (Setup-14) for 5 minutes**. After a problem occurs, the system will try to restart again. If the problem persists, the osmosis system will stop until the problem is resolved.



Solution: The error can be fixed manually by pressing the reset button or by automatic reset every three hours. Check the functionality of FT-01. Perform CIP, or change the membrane.

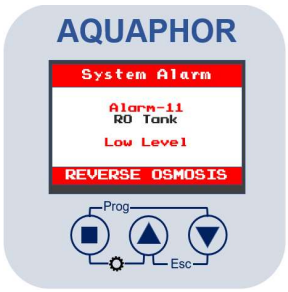
8.10 MINIMUM CONCENTRATE FLOW

The error occurs when the option is activated, the P-01 osmosis system pump is working, the system is not in flushing mode or CIP, and **the osmosis system permeate flow value is less than the set value (Setup-15) for 5 minutes.** After a problem occurs, the system will try to restart again. If the problem persists, the osmosis system will stop until the problem is resolved.

Solution: The error can be fixed manually by pressing the reset button or by automatic reset every three hours. Check the functionality of the concentrate sensor and automatic concentrate valve XV-04.

8.11 LOW PERMEATE LEVEL

The error occurs when **there is no signal from the LLS-04 low water level sensor in the T-03 permeate tank for 20 minutes.**



Solution: The error is fixed when a signal from the low water level sensor is received (when the permeate will be present in the tank).

8.12 HIGH FEED CONDUCTIVITY

The error occurs when the pump of the RO system P-02 is working, and **the conductivity of the raw water of the RO system is greater than the set value for 5 minutes**. After a problem occurs, the system will try to restart it again. If the problem persists, the osmosis system will stop until the problem is resolved.

Solution: The error can be fixed manually by pressing the reset button or by the automatic resetting every three hours. Check the functionality of DI (ECT-02) and pretreatment system.

9. REVERSE OSMOSIS ANDROID APP

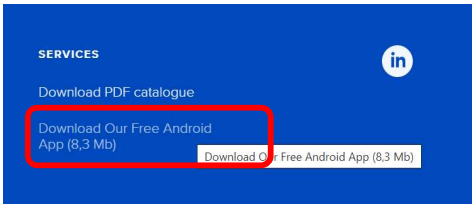
APRO Monitor app functionality:

- Data transfer in the local network
- Setting up the equipment programs and its setups
- Monitoring parameters in a running system, viewing a log, statistics.
- Alarms display

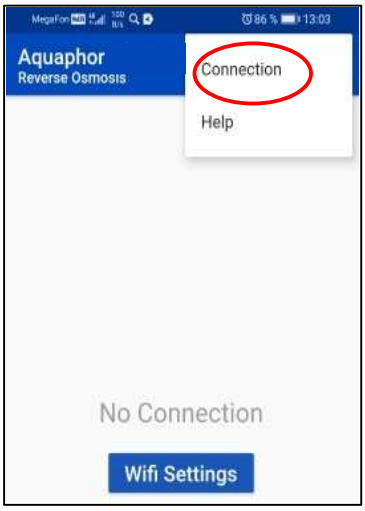
9.1 SETTING UP

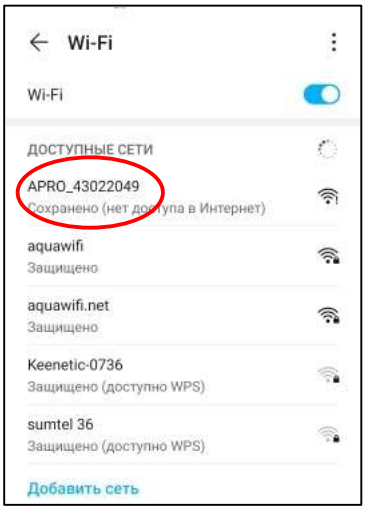
1. Download and install the APRO Monitor app from the official website of the system manufacturer (aquaphor-pro.com) to your mobile device. The link can be found in the footer:

! APRO Monitor app only works on Android OS



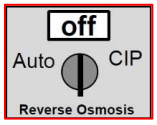
2. Open the app.
3. Configure the connection.
   a) Open the context menu and choose “Connection”.
   b) Press OK.
   c) Choose “APRO_*XXXXX*” network.
   d) Select “Connect” in the pop-up window.





4. Back in the context menu, choose “System’s Settings”.
5. Select the equipment and click “Save”.

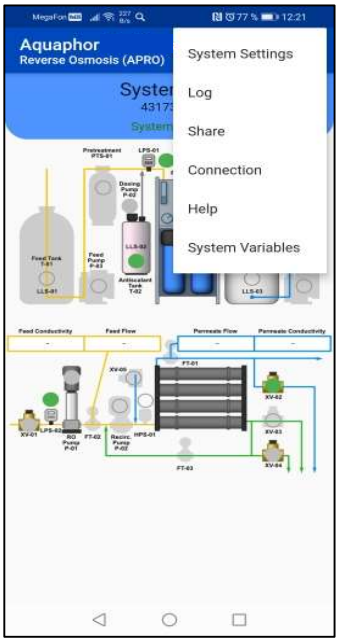
9.2 SYSTEM CONFIGURATION



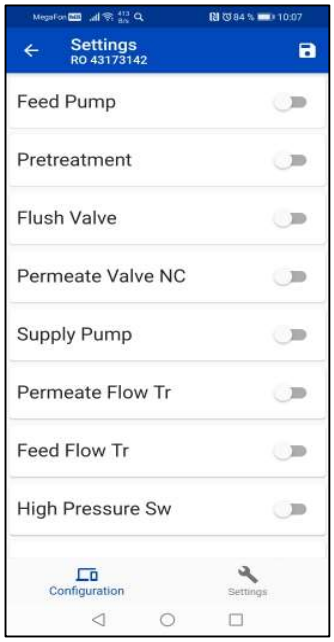
! It is possible to make changes to the system configuration and parameters only in OFF mode.

The starting screen displays the system configuration and available reverse osmosis (RO) system's option **(1)**. System Settings window **(2)** has two subparts: "Configuration" enables or disables programs 01-16 (page ... make reference to the programs part). "Settings" window **(3)** changes the setups (page ...) of the active programs.

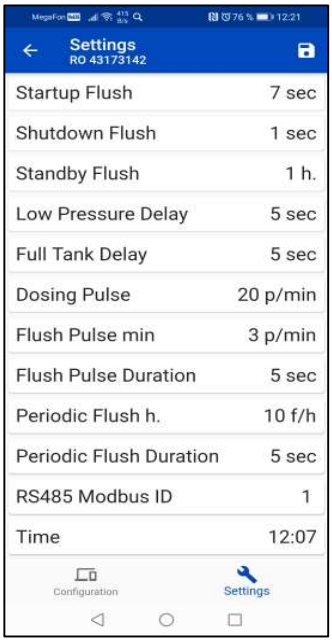
1)



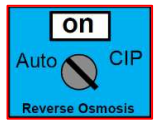
2)



3)



9.3 OPERATING MODE FUNCTIONALITY

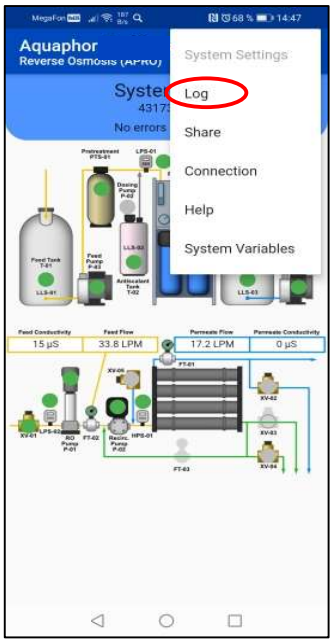


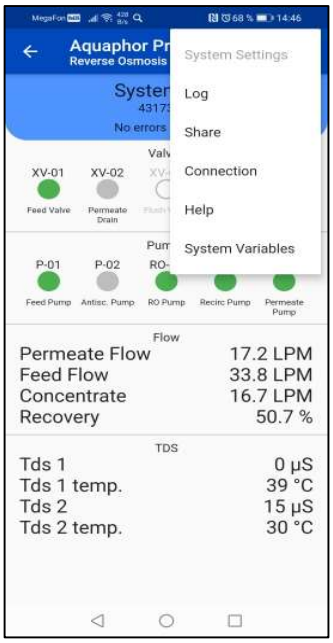
! Operating mode can be started only using a three-position switch on the RO control station.

When the system is operating, the following data is available:

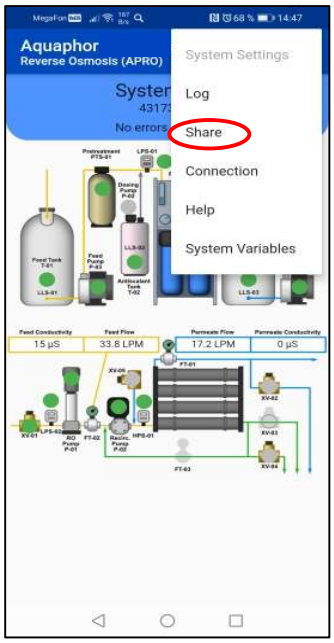
- Total operating hours
- Amount of permeate produced
- The amount of water used
- Overall system performance
- Date and time of starts/stops
- Change of modes
- Operating time of each mode

The “Log“ button of the context menu shows statistics and log of the system.





It is possible to share the statistics with other users and devices. The “Share” button of the context menu suggests several options (browser and messenger).



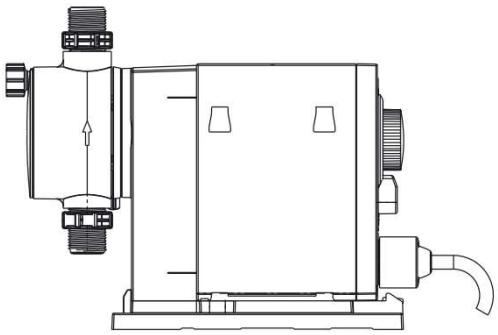
9.4 ADDITIONAL INFORMATION

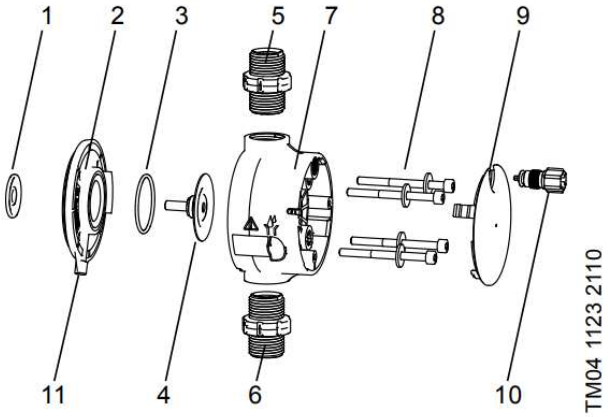
The context menu also contains the “Help” option. A detailed description of APRO application capabilities can be found there.

10. MAINTENANCE

10.1 DOSING PUMP DEGASING

After antiscalant replacement, it is required to perform dosing pump degassing.





Dosing head, exploded view.

1. Safety diaphragm
2. Flange
3. O-ring
4. Diaphragm
5. Valve on discharge side
6. Valve on suction side
7. Dosing head
8. Screws with discs
9. Cover
10. Deaeration valve
11. Drain opening

Start and deaerate the pump.

1. Connect mains supply. Make sure the system is turned on.

2. Open the deaeration valve by approximately half a turn.

3. DDE-B control variant: Turn the capacity adjustment knob to 100 % and wait until liquid flows out of the deaeration hose continuously and without any bubbles. Then set the capacity adjustment knob back to 1 %.

4. Close the deaeration valve.

The pump is deaerated.

10.2 MODULE EXCHANGE

INFORMATION

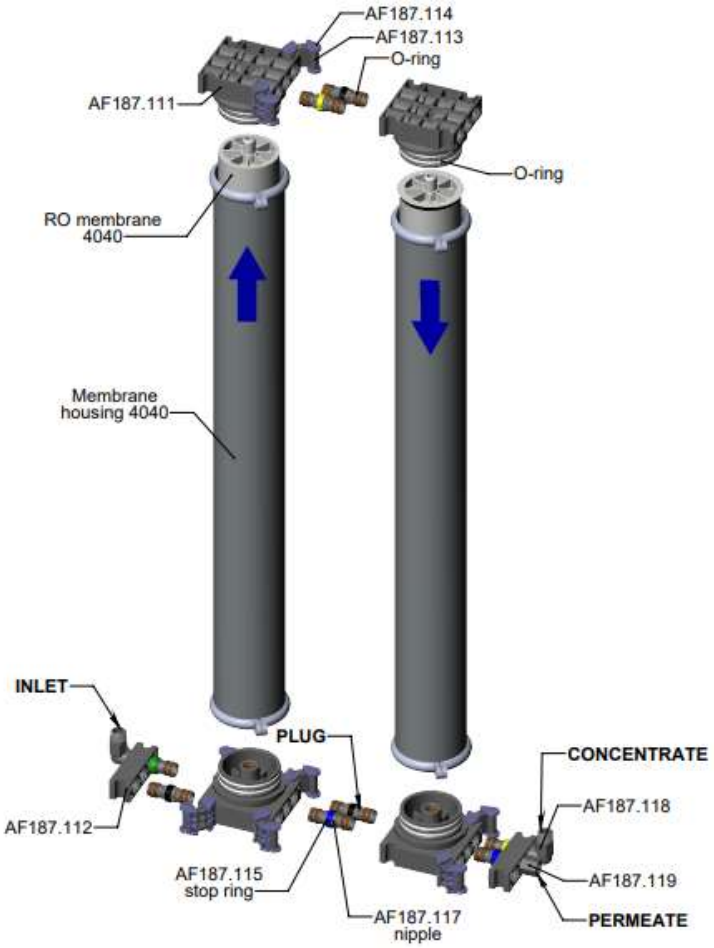
RO module should be sent in for rinse or replacement. Carry out preservation before removing it. After the preservation, remove the module and let the preservative run out through the module's concentrate connection. Close the module's connection before sending it.

ATTENTION: Blocking of the module.

Ensure the right installation direction (arrow on the module) while installing the module.

INFORMATION

The unit should be commissioned again after a module replacement.



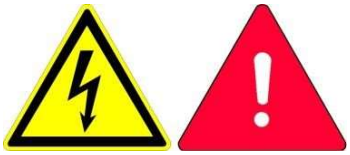
1. **AF187.111**
2. AF187.113
3. AF187.114
4. O-ring (1)
5. O-ring (2)
6. RO membrane 4040
7. Membrane housing 4040
8. INLET
9. AF187.112
10. PLUG
11. AF187.115
12. Stop ring
13. Concentrate flow
14. Permeate flow
15. AF187.118
16. AF187.119

10.3 YEARLY CHECK AND MAINTENANCE

10.3.1 CABLES AND CABLE CONNECTIONS

WARNING: uncontrolled motion of the unit; danger of injury

Turn OFF the main switch and prevent the reactivation.



DANGER: Electric shock, Danger of life

- Turn OFF the main switch and avoid its reactivation.
- Let only the competent staff carry out the electric work.
- Ensure the absence of power before starting to work.
- Consider the national regulations, the safety ones, and if available, the factory prescriptions.

INFORMATION

Environmental influences might damage the cables and cable connections, which shall be checked periodically.

EXECUTION

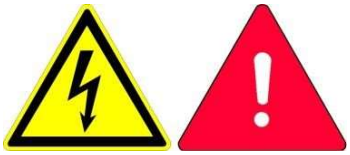
Check the cables and cable connections.

- Check whether the cables are worn out, have fissures and damages.

In case of wear out, fissures or damages, contact the customer service.

- Check the cable connections.

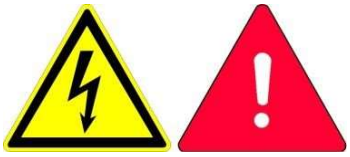
In case of corrosion, contact the customer service.



DANGER: Infections and diarrhea

- Wear personal protective equipment (waterproof clothing, boots, gloves, and breathing protection (e.g., particle filtering half-mask).
- Avoid any contact with washing water and spray mist. Ø Provide sufficient aeration.

10.3.2 AUTOMATIC CONCENTRATE VALVE FLUSH OPENING



DANGER: Electric shock, Danger of life

- Turn OFF the main switch and avoid its reactivation.
- Let only the competent staff carry out the electric work.
- Ensure the absence of power before starting to work.
- Consider the national regulations, the safety ones, and if available, the factory prescriptions.

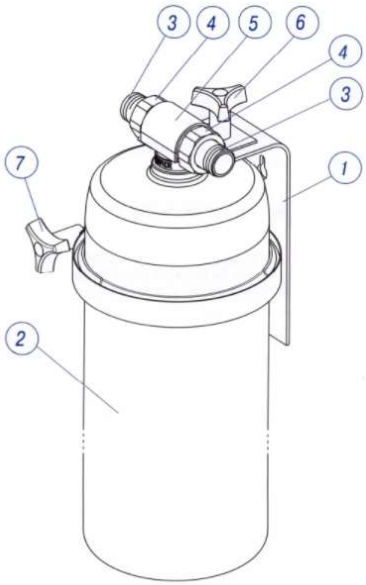
WARNING: Dangerous tasks

- Ensure that only specially trained personnel carries out the tasks.
- Ensure that the laws, regulations, and directives applicable to the site of use are fulfilled.
- Before beginning the tasks, ensure that the air and water systems are pressureless.
- Ensure that the tasks are carried out with suitable tools only.
- Ensure the use of adequate climbing aids and protective measures before working at height to prevent a fall.
- Ensure that the safety data sheets of the auxiliary and operating materials used are fulfilled.
- Ensure the use of personal protective equipment (helmet, non-skid safety shoes, safety goggles, ear protectors, gloves, etc.)
- Consider stumbling and spraining areas.
- Avoid slip hazard.
- Provide sufficient lighting.
- Provide sufficient aeration.
- In case of danger, actuate the emergency-stop switching device.

CAUTION: Possible contamination of the washing water / air

10.4 REPLACING THE FILTER CARTRIDGE

10.4.1 VIKING CARTRIDGE



1. Turn OFF water supply and relieve pressure;
2. Unscrew the coupling nuts (4) and disconnect the quick junction (3);
3. having turned OFF the handle (6), take off the locking plate (5) from the holder (1);
4. take OFF the filter from the holder (1) and pour out surplus of water;
5. Unscrew the handle (7) and take away the water filter clamp;
6. Take away the upper semi-housing and disconnect the filter cartridge off the connecting pipe;
7. Wash out the semi-housings, rubber gaskets (8), and plastic ring (9) from dirt (fig 3);
8. Place a new filter cartridge;
9. Assemble the filter, providing proper placing of two rings (8) into the ring (9) and the ring (9) into the bottom semi-housing;
10. Put the clamp on the semi-housings and screw the handle (7) against stop;

11. Place the assembled filter on the holder (1);
NOTE: Follow the IN and OUT pointers on the manifold (fig. 2).

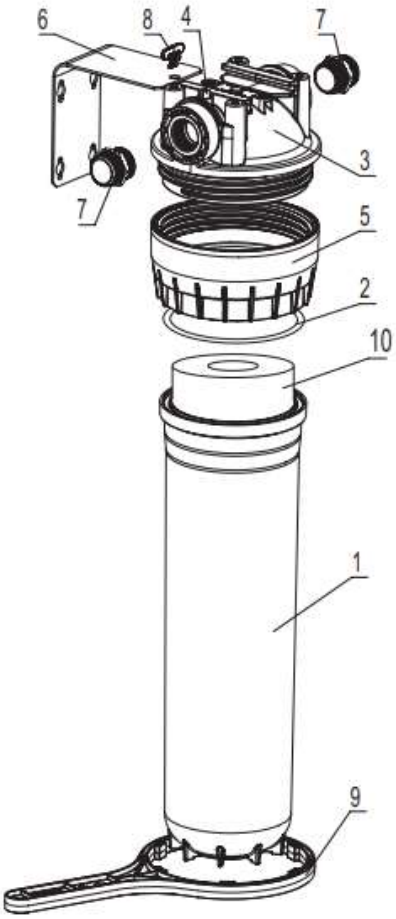
12. Assemble the quick junction (3) having screwed the coupling nuts (4) against stop;

13. Place the locking plate (5) on the holder (1) and screw the handle (6);

14. Turn on water supply and make sure that there is no leakage.

Replace the filter cartridge in proper time!

10.4.1 GROSS CARTRIDGE



The pre-filter needs no specific servicing during its service life, except timely replacement of the filtration module.

Replacing the filter cartridge:
1. Turn OFF the water supply to the pre-filter, release the excess pressure;
2. Unscrew the nut (5) with the plastic wrench (8), remove the cup (1) and the filtration cartridge;
3. Wash the inner surfaces of the cover with water (3), the cup (1), and the rubber o-ring (2);
4. Mount the new filtration cartridge;
5. Assemble the water purifier by screwing on the nut (5) on the cover (3);

CAUTION: It is important not to mix up the entry and the exit holes of the water purifier. The arrows on the cover designate the direction of the water flow.

6. After turning on the water supply, make sure that the water purifier is hermetically sealed;
7. Press button (4) to release the air from the housing. If leakages were found, shut OFF the water supply to the water purifier, drop the excess pressure and tighten the connections

11. RULES OF STORAGE AND TRANSPORTATION

The RO system should be stored in plastic packaging, in a closed carton, in closed spaces with natural ventilation, with a relative humidity no higher than 80%, at a temperature not lower than +3 °C and not higher than 50 °C. Transportation and storage of the RO system are always in a vertical position. It is forbidden to turn over the system and other mechanical changes.

The RO system must be transported within temperature limits of +3 °C up to + 50 °C. Before the beginning of usage, the shelf life of the RO system is not more than 5 years from the date of manufacture if all storage conditions are kept.

Serial No.:_____ Date commissioning:_____ Operator:_____

Sheet No.:_____

Date	Raw water		Feed pressure	Inlet pressure	Pump pressure	DI Supply pressure	DI conductivity	Permeate quantity	Concentr. quantity	RO conductivity	Efficiency	Total permeate	Signature
	Conductivity	Temperature											
	(µS/cm)	°C	(bar)	(bar)	(bar)	(bar)	(µS/cm)	(l/h)	(l/h)	(µS/cm)	(%)	(l)	

AQUAPHOR PROFESSIONAL

Nordic Filtration

At www.nordicfiltration.com you will find a wide selection of filtration products ready for you to order.

Nordic Filtration offers a wide selection of filtration products for water treatment. We have stock in Denmark from where we distribute all of our products to Scandinavia and the the rest of the world.

You can buy our products on local websites or by contacting us by phone or e-mail. Information about our products as well as brochures and manuals can be found on our website (www.nordicfiltration.com).

We can adapt all of our filtration products to your needs, and we offer visits from our consultants in order to find the right solution for you.

WATER TREATMENT

Glasvænget 6
5492 Vissenbjerg
Denmark

+45 72 25 10 00
info@nordicfiltration.com
www.nordicfiltration.com