OPERATING- INSTALLATION & MAINTENANCE MANUAL EKOLIT 200-PM

TABLE OF CONTENTS:

1 MAINTENANCE INTERVALS

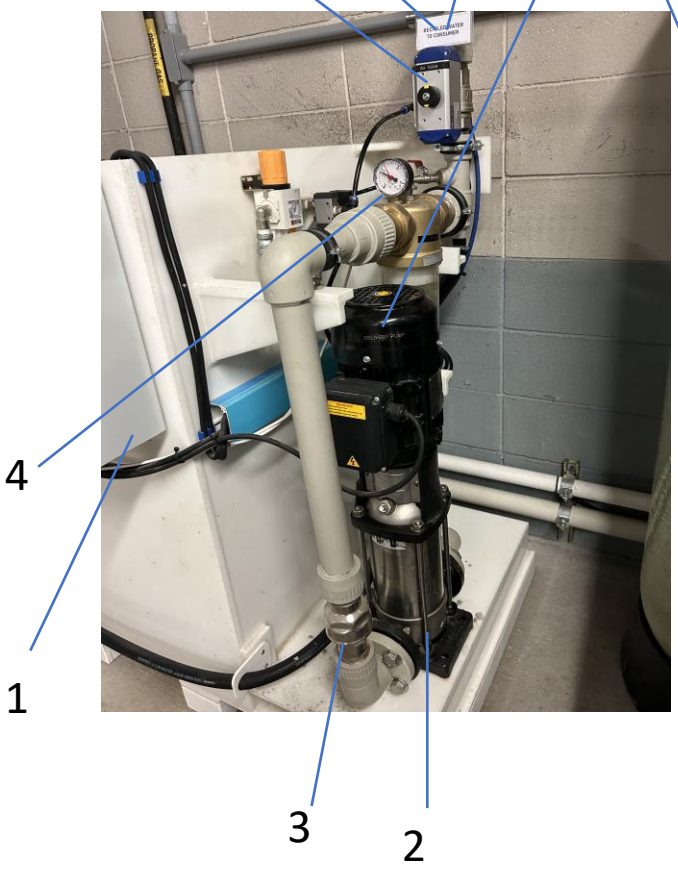
Description	Interval	Action
Function of the filter back flushing	Every 6 month	Checking the adjustment of the pressure switch: The back flush should be activated when the water flow stops, after every car wash or when the buffer tank is completely filled.
Adjustment of the dissolved air flotation membrane	Every 6 month	Adjust the valve "compressed air to flotation membrane" that small turbulences appear on the water surface
Function of the high voltage electrode	Every 6 month	Checking if the light on the electrode is turned on and if the m-ampere meter indicates between 0.10 and 1.00 amperes.
Checking the switching points of the pressure pump	Every 6 months	Switch-on pressure: 50 PSI = 3.5 bar = 3.5 Kg/cm^2 Switch-off pressure: 65 PSI = 4.5 bar = 4.5 Kg/cm^2
Cleaning the high voltage electrode	Every 6 month	Cleaning the rod of the high voltage electrode
Cleaning the cyclone	Every 6 month	Cleaning the jet of the cyclone
Checking the pressure in the air dome	Every 6 months	Adjust air pressure to be 36 PSI = 3.5 bar = 2.5 Kg/cm^2
Cleaning the fine filter	On demand (app. every 6 month)	If the fine filter is completely clogged up (no water pressure after the filter), the fine filter need to be cleaned by taking it out.
Cleaning the screen of the pump in the underground tank	Every 6 months	Cleaning the screen of the sludge pump by opening the "compressed air pipe for back-flushing the screen of the sludge pump" valve
Cleaning the reactor tank	After one year	Cleaning the inside of the reactor tank
Adjustment of the air regulator	Once a year	Adjust the pressure of the air regulator to 94 PSI = 6.5 bar = 6.5 Kg/cm^2
Release water from the air regulator	On demand	Open the valve at the bottom of the air regulator to release the separated water

2 Description of the parts of the recycling unit

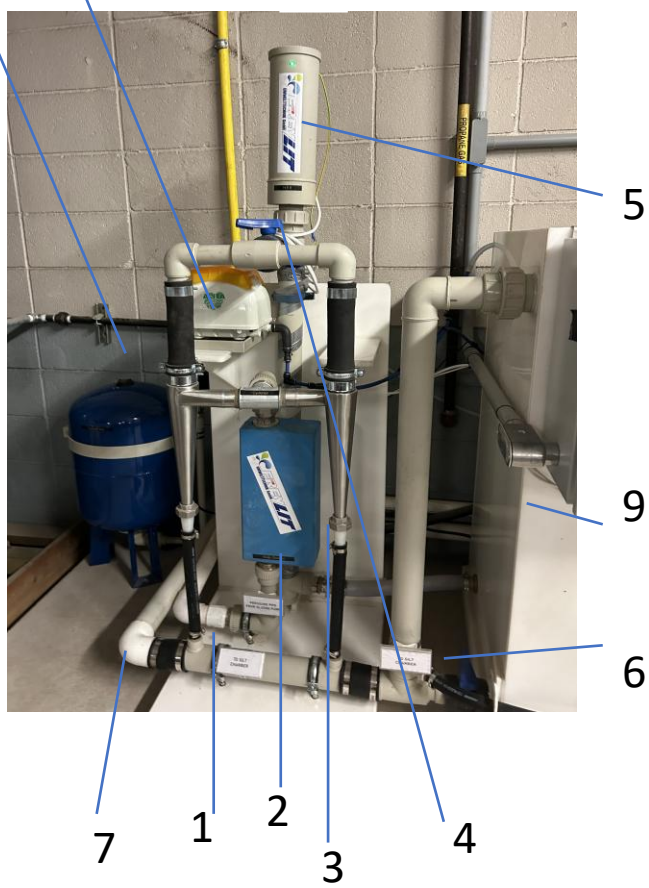
Right side	
1	Control panel
2	Pressure pump
3	Non return valve
4	Pressure gage
5	Fine filter
6	Water meter
7	Pneumatic ball valve to close the recycling pipe during back flushing
8	Pneumatic back flush valve

Left side	
1	Pressure pipe from sludge pump
2	FREYLIT Waterstabilizer
3	Hydrocyclones
4	Ball valve to regulate the flow through the cyclones and the electrode
5	High voltage electrode (HVE)
6	Ball valve to empty the reactor tank
7	Pipe into silt chamber
8	Linear air pump
9	Reactor tank
10	Air Dome
11	Pressure Switch

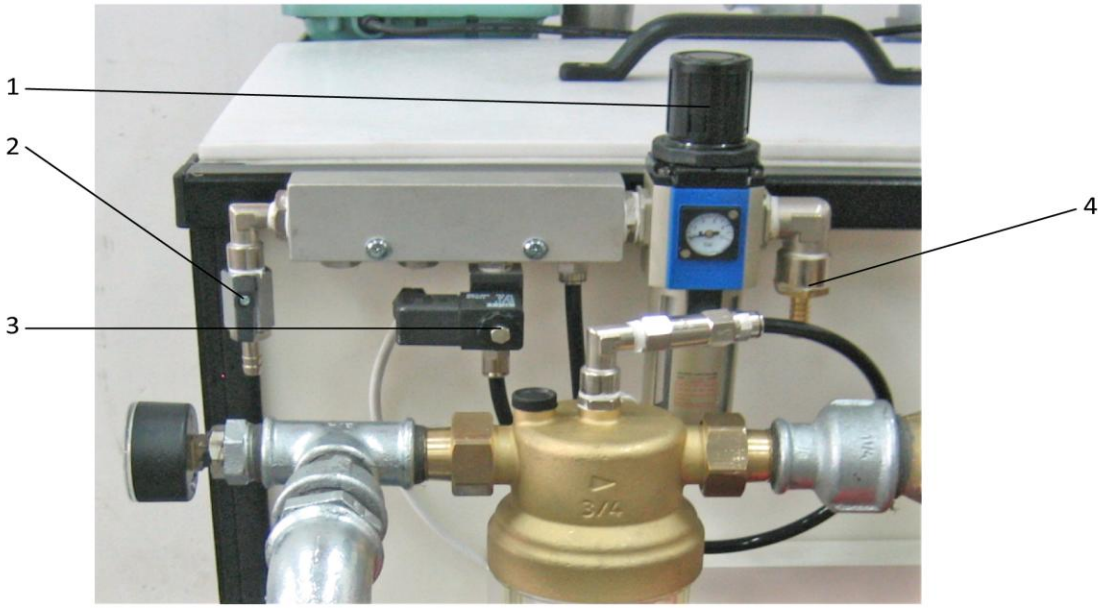
Right Side View



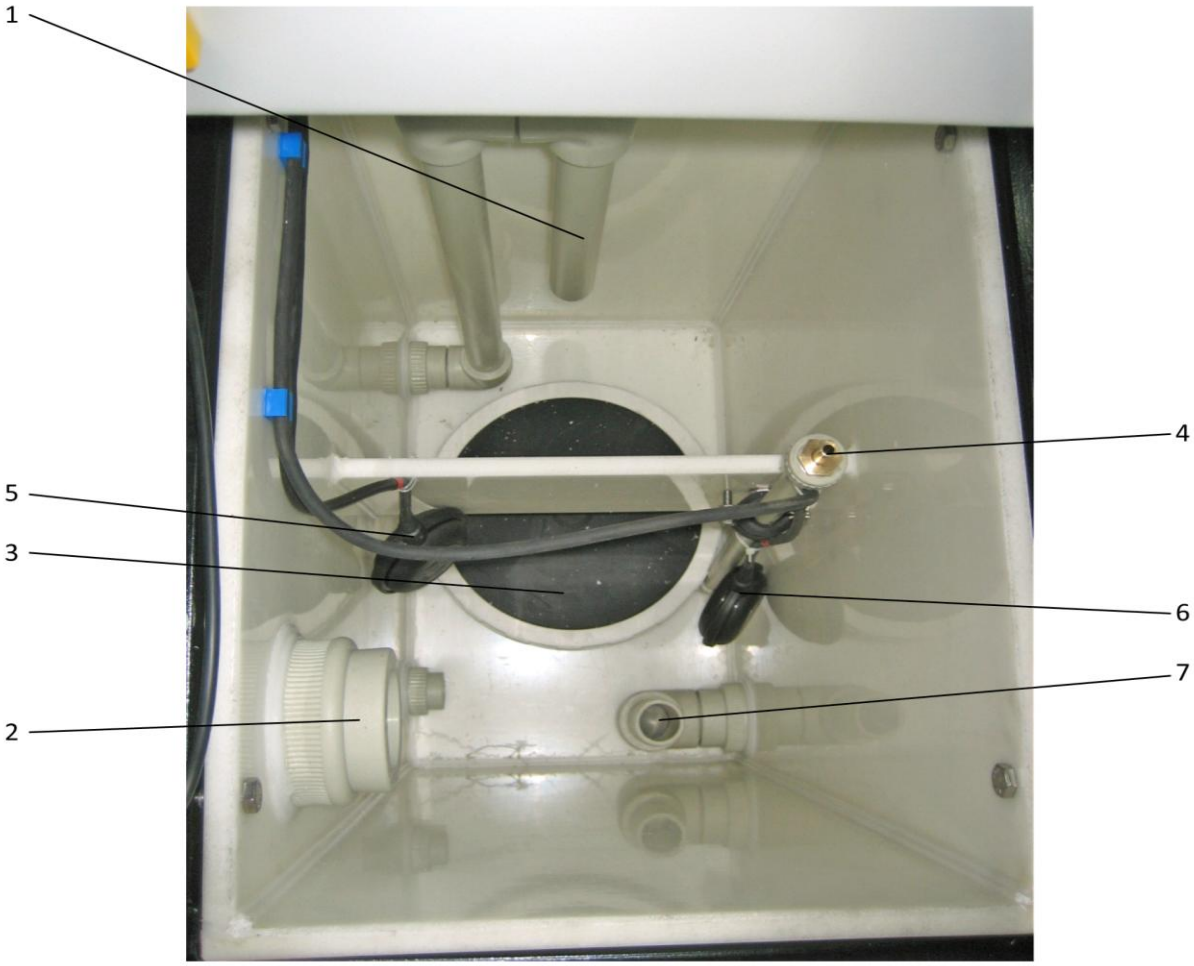
Left Side View



Compressed air manifold	
1	Air regulator
2	Ball valve compressed air for back-flushing the screen of the sludge pump
3	Solenoid valve compressed air for filter back flush
4	Compressed air from compressor



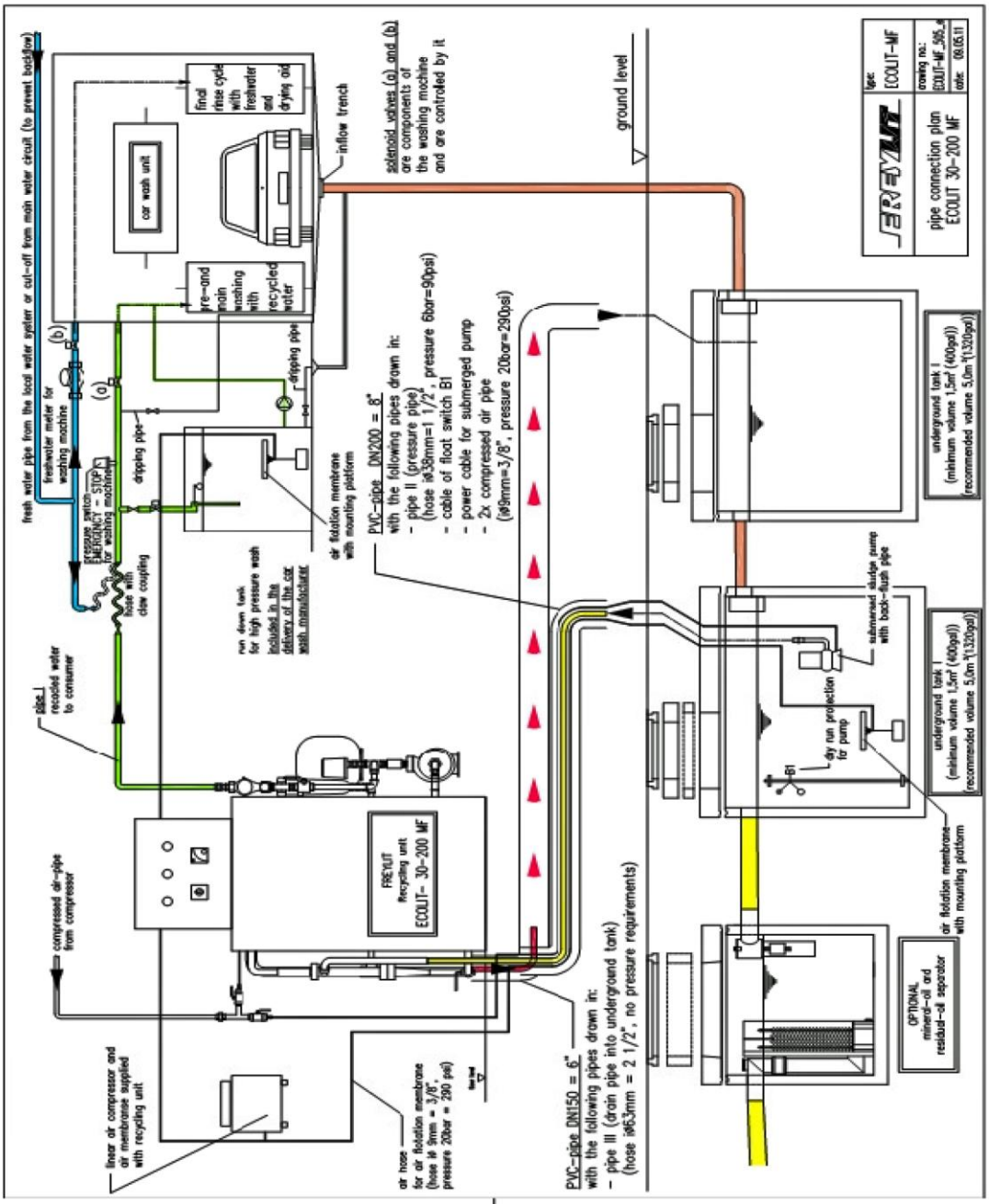
Inside the reactor tank	
1	Water inflow into the reactor tank
2	Overflow to underground tank
3	Flotation membrane
4	Air pipe to flotation membrane
5	Float switch B2 “dry run protection for pressure pump”
6	Float switch B3 “float switch filling the reactor tank”
7	Suction pipe for pressure pump



The sludge pump is switched ON and OFF by the float switch B3. Additionally the sludge pump is also controlled by a time relay inside the control panel. The flotation membrane brings small solid particles and dirt to the water surface of the reactor tank. In order to remove this dirt, the time relay switches the sludge pump at regular intervals. The sludge pump will be turned ON for 30 minutes and will be turned OFF for 15 minutes. This causes the collected dirt on the water surface to overflow and exit into the underground tank.

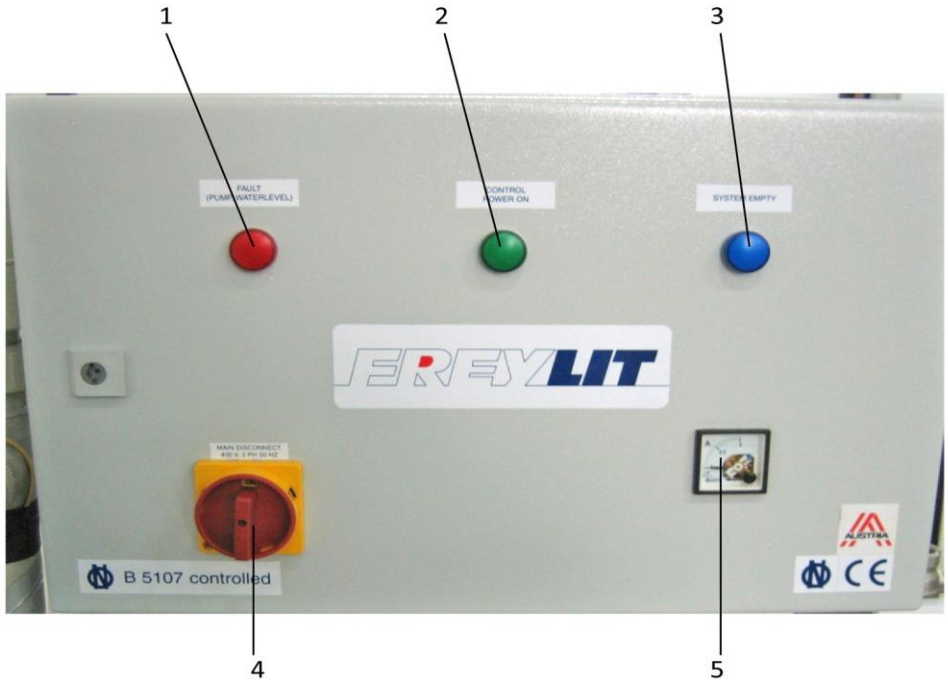
The pressure pump of the recycling unit is activated when the water level rises inside the reactor tank and the float switch B2 has reaches its highest position.

3 Connection diagram



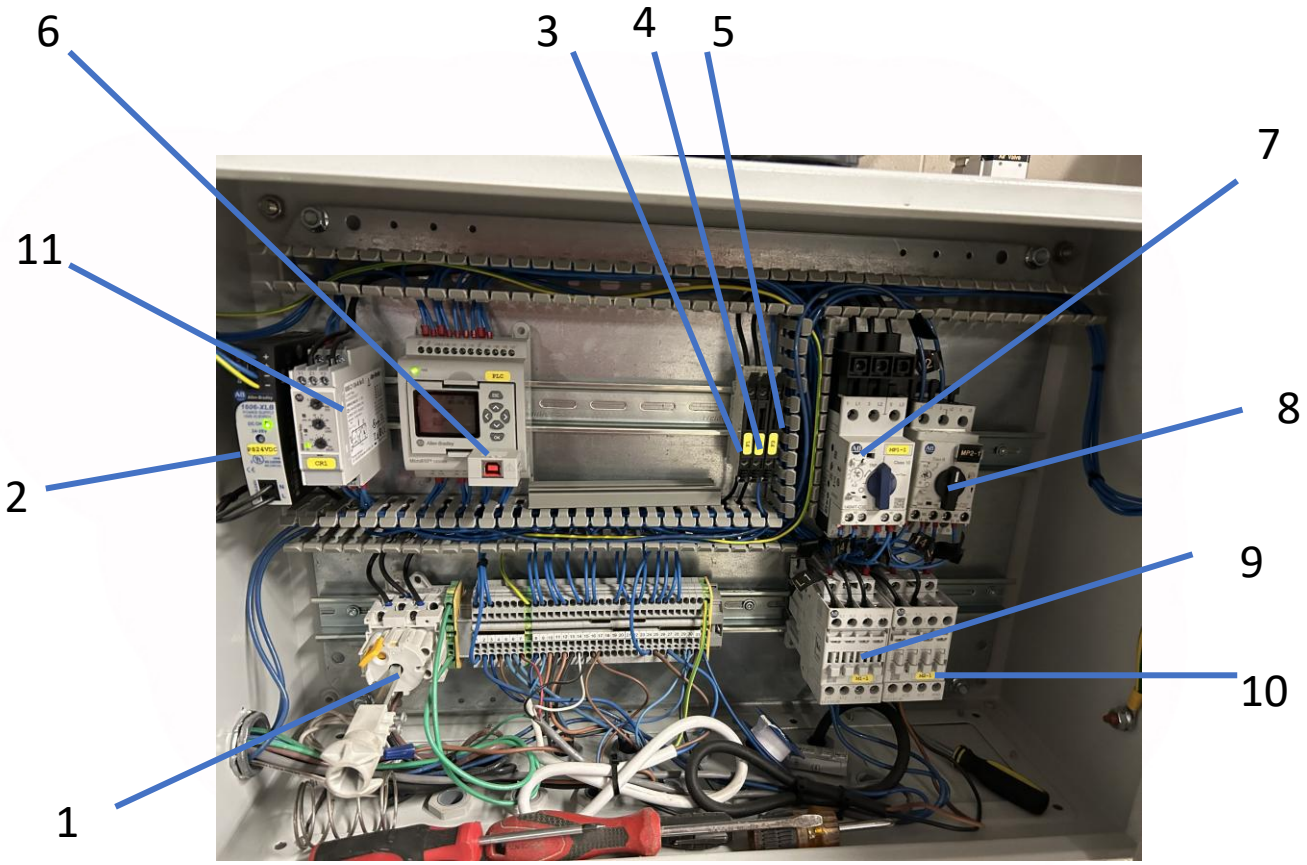
4 Control panel

	Outside	
1	Red light “pump fault”	Activated if a motor protective switch of one of the pumps has turned off a pump
2	Green light “control power on”	Activated when the electric current is available and the main switch is on
3	Blue light “system empty”	Activated when the underground tank is empty and the float switch B1 “dry run protection for sludge pump” has reached its lowest position
4	Main switch	To turn the power of the recycling unit on
5	Ampere meter for high voltage electrode	To detect the current draw of the high voltage electrode



The transformer inside the control panel supplies the high voltage electrode (HVE) with electric current of 24 Volt DC. The HVE is always in operation in the control lamp on the HVE is ON. The HVE is operating correctly when the Ampere meter indicates an amp draw between 0,1 to 1 Ampere.

Inside			
1	Main switch	power supply to the recycling unit	
2	Transformer	24 VDC for control of the recycling unit and the HVE	
3	Fuse for transformer	2 Ampere	
4	Fuse for transformer	2 Ampere	
5	Fuse for high voltage electrode	2 Ampere	
6	Allen Bradley 810 Microprocessor	Circulation time for the Sludge pump 30 min ON 15 min OFF	Backflushing timer 20 secs on Off until needed
		On / Off delay time for pressure pump 50 sec	
7	Motor protective switch F1	For sludge pump	
8	Motor protective switch F2	For pressure pump	
9	Contactor M1	For sludge pump	
10	Contactor M2	For pressure pump	
11	Current relay	For sludge pump to prevent from dry run	



5 Description and Function of the recycling system

For installing an ECOLIT recycling system it is necessary that the capacity of your underground waste water tank or car wash pit (silt chamber) should have a minimum volume of 1,5 m³. We recommend a volume of **5,0 m³ or larger**. The minimum recommended **water depth is 120 cm**. If these dimensions cannot be met at the site then an above ground silt chamber can be used, which draws from a sludge pump placed in a small pump sump.

The used wash water first flows out of the car-wash into a collection pit, from where it flows through a sewer pipe into the silt chamber. Any large solid particles present in the water will settle in this tank.

A float switch **(B1)** and a **sludge pump** are installed in the underground tank.

This pump delivers the water through ***pipe "pressure pipe from sludge pump"*** to the recycling unit.

There it passes through the ***FREYLIT* water stabilizer,** the **cyclone** and a **high voltage electrode** into the **reactor tank** of the ECOLIT recycling unit.

Inside the reactor tank two float switches **(B2** and **B3)** and a **flotation membrane** are installed.

When the car wash machine demands water, recycled water is pumped by a **pressure pump** out of the reactor tank through the **fine filter** (with an automatic back flush device) to the car wash machine. This process is automatically controlled.

The filtered and degermed water is delivered under an average pressure (4 bar), through ***pipe "recycled water to consumer",*** to the car wash for re-using. A **water meter** is installed in this pipe to monitor the amount of recycled water delivered for use in the car wash.

Recycled water can be used in the car wash for all pre-wash, main-wash and high-pressure-wash requirements.

The final rinse cycle, into which the drying agent or wax is added, should be carried out with fresh water from the local water supply. The car wash machine switches back and forth between recycled water and fresh water as needed by the different wash cycles independently of the recycling unit.

IMPORTANT:

When installing a car wash, ensure that it is equipped with ***two water inlet connections***:

- one for recycled water
- and another for fresh water

We recommend installing a water meter in the fresh water pipe from the local water supply to the car wash to monitor the amount of fresh water which was used in the car wash.

When a wash cycle begins, the water pressure in ***pipe "recycled water to consumer"*** on the ECOLIT Recycling unit drops from 4,5 to 3,5 bar.

If the minimum pressure is reached, the **pressure switch** on the ECOLIT Recycling unit activates the pressure pump, which feeds recycled water through the fine filter to the car wash, at a pressure of app. 4 bar.

When the wash cycle ends the pressure switch on the ECOLIT Recycling unit will stop the pressure pump again once the maximum pressure of 4,5 bar is reached.

This process is repeated for each wash cycle.

To prevent the sludge pump from running dry (at initial start-up or due to leaks), a float switch B1 is installed in the underground tank. This switch automatically stops the sludge pump if the water level in the underground tank drops below the allowed minimum level.

The electric cable for float switch B1 and the electric cable for the sludge pump runs through a PVC drain pipe installed from the underground tank to the ECOLIT Recycling unit.

A compressed-air hose, which is installed between the back-flushing pipe of the sludge pump and ***pipe "compressed-air pipe for back-flushing the screen of the sludge pump"*** on the recycling unit, also pass through this PVC drain pipe**.** The compressed air hose is required for cleaning the screen of the sludge pump during maintenance.

To prevent the pressure pump from running dry (at initial start-up) a float switch (B2) is installed in the reactor tank. This switch automatically deactivates this pressure pump if the water level inside the reactor tank falls below the allowed minimum water level.

The float switch B3, which is installed in the reactor tank, activates or deactivates the sludge pump in the underground tank.

Automatic Back-Flush of the fine filter

The recycling unit is equipped with a fine filter which is automatically back-flushed.

This back-flush mechanism is programmed to proceed after each car wash process automatically. It will be activated by a pressure switch. A signal will be sent by the pressure switch to a time relay, which will open the pneumatic back-flush valve for 20 seconds.

Description of the Cyclone

Before the water reaches the reactor tank it passes through a hydro-cyclone. Here larger suspended solids are separated and returned to the sit chamber.

Description of the High Voltage Electrode

After the hydro-cyclone the recycling water passes through a pipe which is equipped with a high voltage electrode. Here a high voltage energy field is created which causes flocculation of the suspended solids and has an anti-algae effect.

Description of the flotation membrane

By means of the flotation membrane which is installed at the bottom of the reactor tank the flakes created by the high voltage electrode are floated. These flakes or dirt layer on the water surface in the reactor tank is drained periodically to the sit chamber.

Description of the FREYLIT Water Stabilizer

The Water Stabilizer works by a physio-kinetic process and does not need electricity, chemicals or maintenance. The water stabilization process is achieved by passing the water through a double walled cylinder, which contains a high - energetic medium. As the water flows through the Water Stabilizer, the water molecules are excited and the oxygen contained in the water is activated. The development of germs and bacteria in the recycled water is thereby prevented.

RECYCLING RATE

The recycling unit *ECOLIT* can recycle 100% of the used car wash water which is collected in the storage tank. However, not all of the water which is used in the car wash process ends up in the drains to the underground tanks. On average some 10%-20% of the wash water is lost due to evaporation and carry out at the car wash. This loss of water varies depending on weather conditions (wind, temperature,...) and type of cars and must be compensated by adding fresh water into the system. For example if a car wash uses 100 litres of water, on average only 85% or approx. 85 litres will end up in the underground tanks. This coincides approximately with the ration of wash water to rinse water used in common car wash machines. Therefore, the FREYLIT system will supply recycled water for the pre-wash, under chassis wash and any wash cycles, while the final rinse cycle is done with fresh water. This way the water lost from the system with every vehicle wash process is compensated for and there is only minimal discharge of overflow to the sewer.

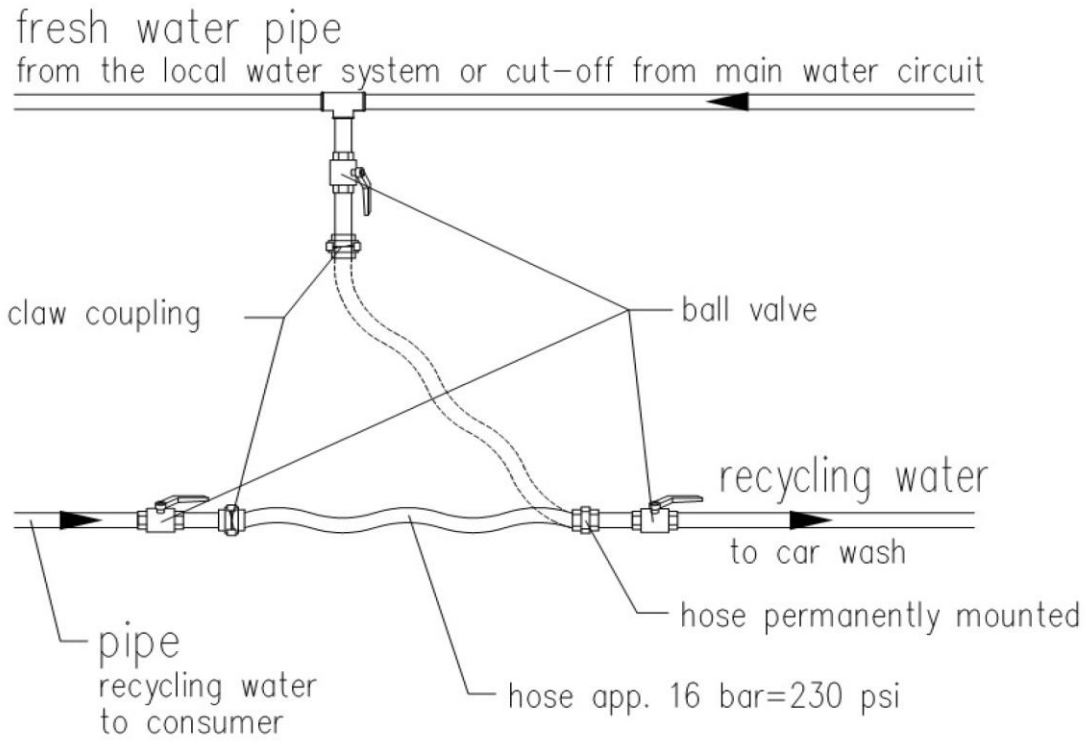
The actual recycling rate is determined by the ratio between recycled and fresh water use. This is, however, controlled by the settings of the car wash machine itself. If, for example, 80 litres of water are used for the pre-wash and main wash cycle, and 20 litres are used for the final rinse cycle, then the resulting recycling rate in this particular case is only 80 %.

6 Freshwater switching option

To maintain the washing operation during maintenance or breakdown of the recycling unit it is possible to switch the car wash from recycling water to fresh water.

Furthermore, it is possible to switch the car wash from recycling water to fresh water during wintertime, if the salt content is too high.

This switching option should be installed during the installation of the recycling unit by a plumber.



7 Winteroperation

During wintertime operation in cold countries, if salt is used on the roads as an anti-freeze agent, the salt content of the recycled water may rise.

Remarks:
The salt content of the wash water does not affect the operation of the FREYLIT recycling unit.

However, our experience has shown that a high salt content in the recycled water interferes negatively with the drying results achieved. This depends mainly on the drying chemicals which are used.

During wintertime the salt content should be measured by using a conductivity meter every 3 days.

The highest permissible salt content value in micro Siemens (µS/cm) is given by:
the washing machine supplier
or the supplier of the vehicle care chemicals.

If the recommended maximum salt content value is exceeded, then the recycling water in the system must be diluted with fresh water.

To reduce the salt content in the recycling water the vehicle washing operation can be switched from recycled water to fresh water for one to two days, until the salt content recommended by the supplier of your vehicle wash machine and chemicals is reached.

ATTENTION !

While the vehicle washing machine is operating with fresh water only, the recycling unit must remain turned on, otherwise the degerming process is interrupted and bacteria will develop in the system. (This means that the colour of the water will turn black and bad odour will develop)

When the desired salt content has been reached switch the vehicle washing machine back from fresh water operation to recycling water operation.

8 Installation

8.1 Pre-requisites for the installation of a wash water recycling system

8.1.1 Underground tanks

The used wash water from the vehicle wash bay must be directed to an underground tank or pit. This tank is called the silt chamber and should have a volume of approximately 3-5m³, but at least a minimum volume of 1.5m³. This tank functions as a silt settlement and collection tank, where heavy solids settle to the bottom.

It is recommended to have a second underground tank, downstream after the silt chamber, which functions as the untreated water storage tank. This should also have a volume of 3-5m³. Untreated water is delivered by means of a submersible sludge pump to the recycling system located above grade.

If it cannot be avoided, the silt chamber and storage tank can be combined into one vessel only. However, this may affect the quality of the recycled water.

A third underground tank may be installed downstream after the storage tank to be used as oil/water separator. Only the overflow excess water from the storage tank is directed through the oil separator for the removal of any residual oil before discharging into the public sewer in accordance with any local regulations mandating the use of oil separators.

8.1.2 Underground piping

A sewer pipe with diameter DN150 is to be installed connecting the silt chamber to the plant room where the recycling system is located.

A second sewer pipe with diameter DN200 is to be installed connecting the storage tank to the plant room where the recycling system is located.

The pipes are used to house hoses and cables to connect the recycling system.

N.B. When installing the above mentioned sewer pipes no 90° elbows should be used. Use 2 times 45° elbows to go around corners, otherwise the hoses and cables cannot be installed into these pipes.

Alternative option to points 1 & 2 above:

In case no underground tanks can be constructed, or for retrofitting existing vehicle wash facilities, while avoiding additional civil works, it is possible to use above ground silt chamber and storage tank. In this case it is only necessary to capture the used wash water in a pup sump and deliver it by submersible sludge pump to the silt chamber & storage tank located above ground.

8.1.3 Car Wash Equipment

The car wash machine must be equipped with two water inlet connections. One for recycled water used in the pre-wash and mail wash cycles, and one for the final rinse which uses fresh water.

In manual high pressure wash bays, the pre- and main wash cycles use recycled water, while the final rinse is done with fresh water.

8.1.4 Plant room (location where the recycling system is installed)

The recycling system should be connected to its own independent power supply, since the system remains in automatic operation 24 hours per day. The stand-by mode water circulation must continue, even when no vehicles are being washed to avoid the accumulation of bacteria in the wash water.

For conducting maintenance work on the recycling system a compressed air connection near the recycling system is needed.

The space requirements of the recycling system vary according to the model. Please see the data sheet of the particular model to be installed.

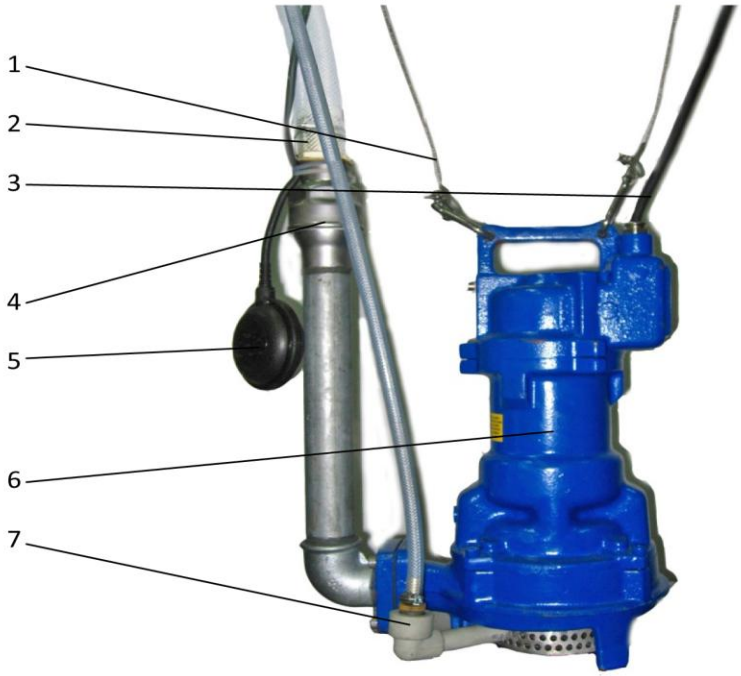
8.1.5 Wash Chemicals

The wash chemicals used must be recyclable, which means that no adverse chemical reaction occurs when the different wash chemicals are mixed together. Particular care must be taken when using different types of chemicals which ended up mixed together in the recycled water (this includes chemicals for cleaning the wash bay itself).

It is best to contact your supplier of wash chemicals to inform them that a recycling system will be used and their products should be compatible.

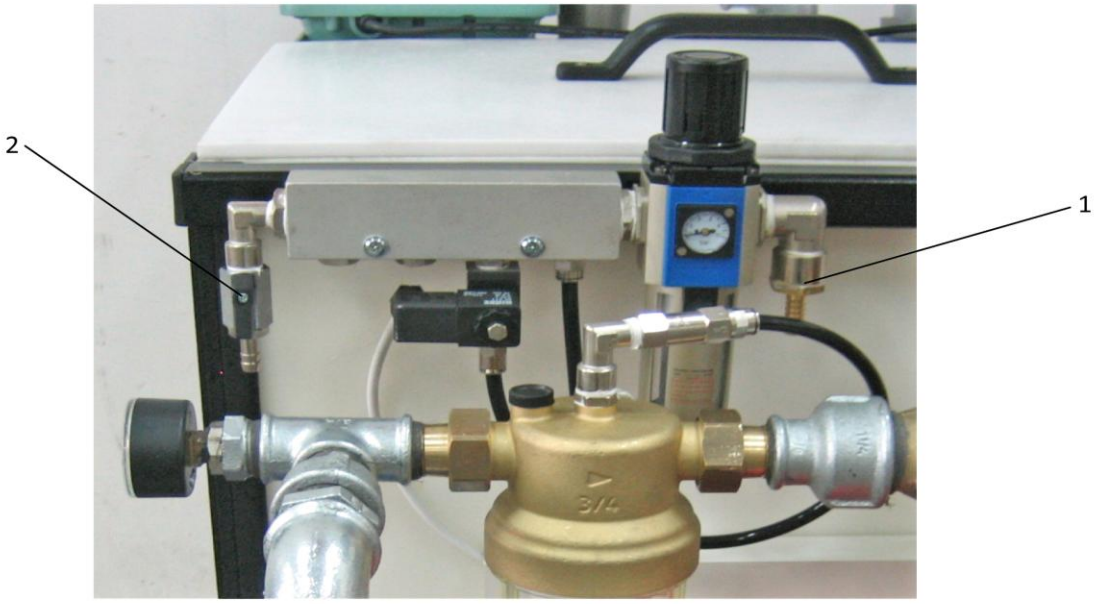
8.2 Installation of the sludge pump in the storage tank

Sludge pump		
1	Cable mounting for sludge pump	Stainless steel cables have to be mounted with screws in the underground tank and adjusted to the correct length. The pump should be hanging in the lower third of the tank. However, the float switch in upper position must be at least 5 cm below the water level.
2	Pressure pipe between sludge pump and recycling unit	A hose (inner diameter 38mm, 6 bar) must be installed from the storage tank through an underground pipe in the equipment room to the recycling unit.
3	Power cable of sludge pump	The pump is equipped with a 30 meter cable. This cable must be installed from the storage tank through an underground pipe in the equipment room to the recycling unit.
4	Non return valve	Non return valve of the sludge pump
5	Float switch “dry run protection for sludge pump”	The float switch is equipped with a 30 meter cable. This cable must be installed from the storage tank through an underground pipe in the equipment room to the recycling unit.
6	Sludge pump	The sludge pump delivers water from the storage tank to the recycling unit in the equipment room.
7	back-flushing pipe to clean the screen of the sludge pump	A hose (inner diameter 9 mm, 20 bar) must be installed from the storage tank through an underground pipe in the equipment room to the recycling unit.



8.3 Installation of the compressed air pipe for back-flushing the screen of the sludge pump

Compressed air manifold	
1	Compressed air from compressor
2	Pressure hose (inner diameter 9 mm, 20 bar) must be connected to the back-flushing pipe of the sludge pump in the storage tank.



8.4 Pipe installation on the recycling unit

Recycling unit		
1	High voltage elektrode (HVE)	In order to avoid damage during transport the HVE is dismantled and must be installed into the PP pipe before commissioning. The reinforcement of the HVE must be removed and the union must be tightened. The ground wire of the HVE must be connected with the PP pipe.
2	Pressure pipe between the sludge pump and the recycling unit	A hose (inner diameter 38mm, 6 bar) must be installed from the storage tank through an underground pipe in the equipment room to the recycling unit.
3	Drain pipe into silt chamber	A hose (inner diameter 63) must be installed from the storage tank through an underground pipe in the equipment room to the recycling unit.
4	Recycled water to counsumer	This pipe must be connected to the recycled water supply of the vehicle washing machine. A freshwater switching option should be installed.

8.5 Installation of the flotation membrane inside the storage tank

The supplied flotation membrane has to be assembled as shown below and placed at the bottom of the storage tank. It is important to ensure that the flotation membrane is not placed directly below the sludge pump.

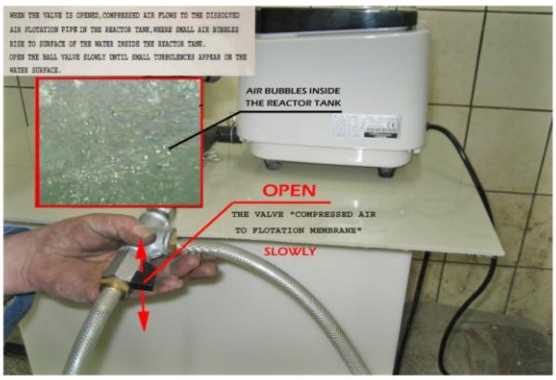
A hose (inner diameter 9 mm, 20 bar) must be installed from the storage tank through an underground pipe in the equipment room to the recycling system and connected to the linear air compressor.

8.6 Connection of the flotation membranes

One flotation membrane is installed inside the reactor tank and a second one is installed inside the storage tank.

The air supply to the membranes comes from a linear air compressor. An air line is installed into the storage tank and the second one is installed into the reactor tank. The air line into the reactor tank is equipped with a ball valve to regulate the air flow.

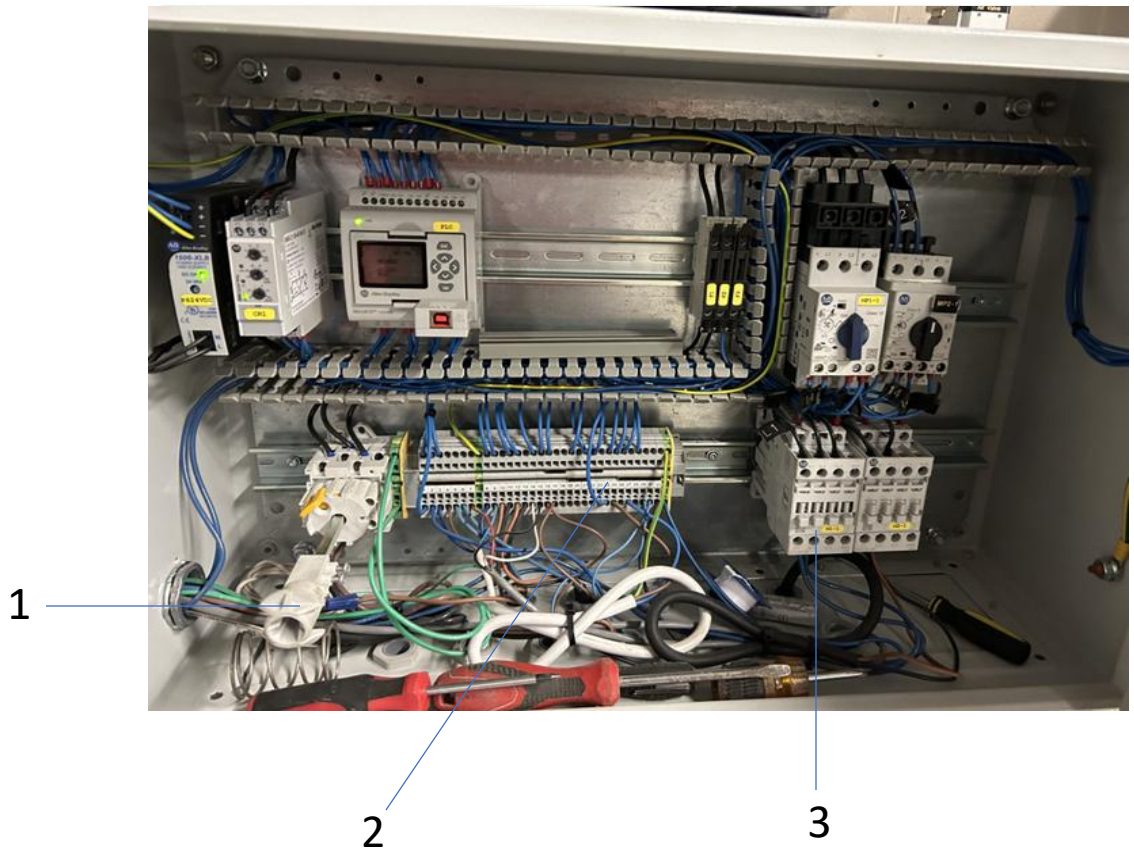
When the ball valve is opened, air flows to the dissolved air flotation membrane inside the reactor tank, where small air bubbles rise to the water surface. The ball valve should be opened slowly, until small turbulences appear on the water surface.



8.7 Electrical installation of the recycling unit

Control panel inside		
1	Main switch	Power supply for the recycling unit, connection data according to wiring diagram inside the control panel
2	Terminals for float switch B1 dry run protection for sludge pump	Connection of the float switch in the storage tank to the terminals according to wiring diagram inside the control panel
3	Contactor M1	Connection of the sludge pump

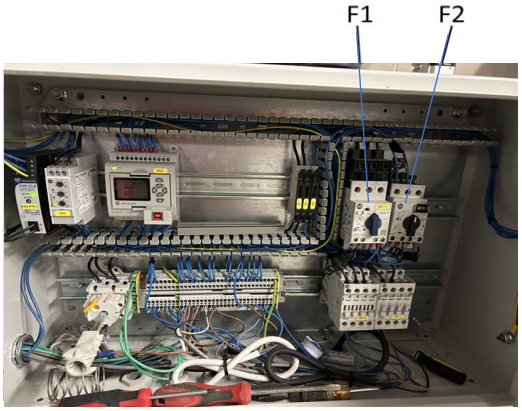
ATTENTION: IT IS NECESSARY THAT A GROUND WIRE IS CONNECTED TO THE RECYCLING UNIT !



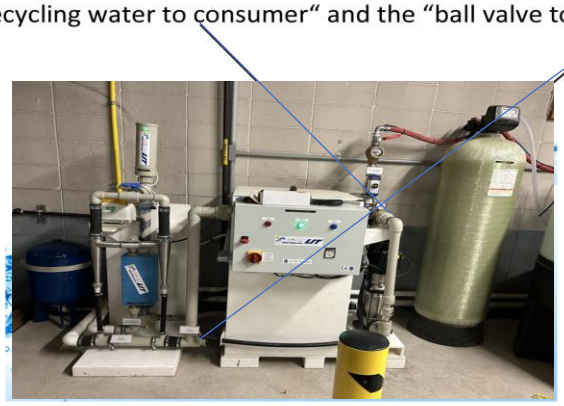
9 Commissioning

1. Before the recycling unit can be commissioned, it is necessary that the underground tanks are completely filled with water.

2. Turn the motor protective switch F1 and F2 on and check the adjustment or the amps according to the control diagram.



3. Close the ball valve „recycling water to consumer“ and the “ball valve to empty the reactor tank“.



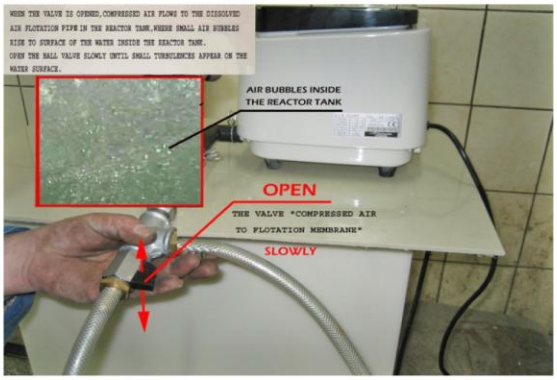
4. Open the ball valve to regulate the flow through the cyclones and the electrode.

5. Turn the main switch of the recycling unit on.

6. Now the sludge pump supplies water from the storage tank into the reactor tank. If the flow rate is low (visual inspection), the rotation of the sludge pump is wrong and two phases must be exchanged at the contactor M1.
   If the rotation of the sludge pump is correct open the ball valve to regulate the flow rate through the cyclone and the high voltage electrode about 45 degrees.

7. If the water level inside the reactor tank has reached the upper position of the float switch B2 "dry run protection for pressure pump", the pressure pump of the recycling unit will start. If the pressure in the system does not rise over 4 bar, then the rotation of the pressure pump is wrong and two phases at the contactor M2 must be exchanged.

8. The linear air pump must be connected electrically.
   The air lines to the flotation membranes come from the linear air pump. One line leads into the storage tank and a second line into the reactor tank. The air line into the reactor tank is equipped with a ball valve to regulate the air supply.
   If the valve is opened, air flows to the flotation membrane inside the reactor tank and small air bubbles rise to the water surface. The valve should be opened slowly until little turbulence on the surface is visible.



9. Now, the ball valve "recycling water to the consumer" can be opened and car washes can be carried out.

10. During the first vehicle washes, the water level in the reactor tank needs to be checked.
    If the water level inside the reactor tank drops 25 cm below the lower switching point of the float switch B3 "float switch filling the reactor tank", the ball valve to regulate the flow rate through the cyclone and the high voltage electrode needs to be opened a little bit more and the water level needs to be observed.
    The ball valve needs to be opened until the water level in the reactor tank does not drop more than 25 cm below the lower switching point of the float switch B3.

10 Maintenance

10.1 Function of the filter back flushing

every 6 month

The fine filter on the recycling unit is equipped with an automatic filter back flush.

The filter back flush is controlled by the pressure switch of the recycling unit and by the time relay for filter back flush. If the max pressure of the recycling unit is reached, the time relay starts to count. After the pressure has not dropped for 60 seconds, the back flush will be activated for 20 sec.

This will open the pneumatically controlled back flush valve (at the bottom of the fine filter) for 20 sec. and the pneumatic ball valve in the recycling pipe to consumer will be closed for 20 sec. At the same time the solenoid valve for filter back flush will be opened and compressed air will be injected into the fine filter. After completion of the back flush process the pneumatic back flush valve and the solenoid valve for compressed air will close and the pneumatic ball valve will open.

During the back flush process, the fine wire mesh inside the transparent filter casing is flushed against the normal flow direction (from inside to outside). The dirty back flush water is released by the back flush valve back to the underground tank.

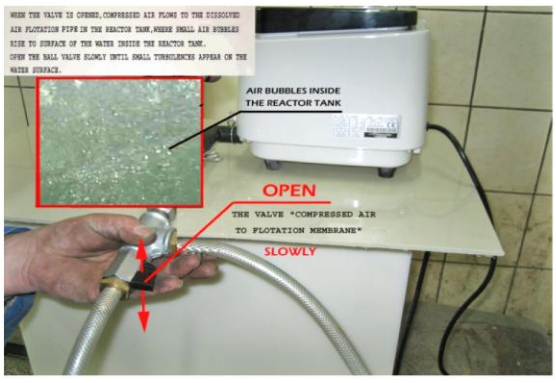
10.2 Adjustment of the dissolved air flotation membrane

every 6 month

One flotation membrane is installed inside the reactor tank and a second one is installed inside the storage tank.

The air supply to the membranes comes from a linear air compressor. On air line is installed into the storage tank and the second one is installed into the reactor tank. The air line into the reactor tank is equipped with a ball valve to regulate the air flow.

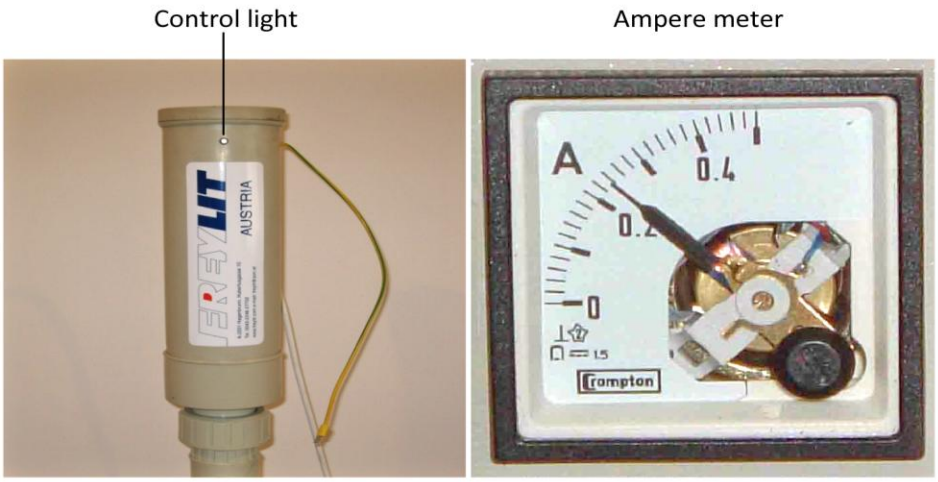
When the ball valve is opened, air flows to the dissolved air flotation membrane inside the reactor tank, where small air bubbles rise to the water surface. The ball valve should be opened slowly, until small turbulences appear on the water surface.



10.3 Function of the high voltage electrode

every 6 month

The transformer inside the control panel supplies the high voltage electrode (HVE) with electric current of 24 Volt DC. The HVE is always in operation in the control lamp on the HVE is ON. The HVE is operating correctly when the Ampere meter indicates an amp draw between 0,1 to 1 Ampere.



10.4 Checking the switching points of the pressure switch

every 6 month

The pressure switch activates the pressure pump at a pressure of 3,5 bar = 51 psi and deactivates the pressure pump at a pressure of 4,5 bar = 65 psi.

When the maximum pressure of 4,5 bar = 65 psi is reached, the pump will not stop immediately, but will continue for a period of 50 sec. longer.

This process is controlled by the time relay OFF time delay inside the control panel. This control is necessary to avoid the pump switching on and off during a wash cycle.

Adjustment of the pressure switch according to the manual of the pressure switch.

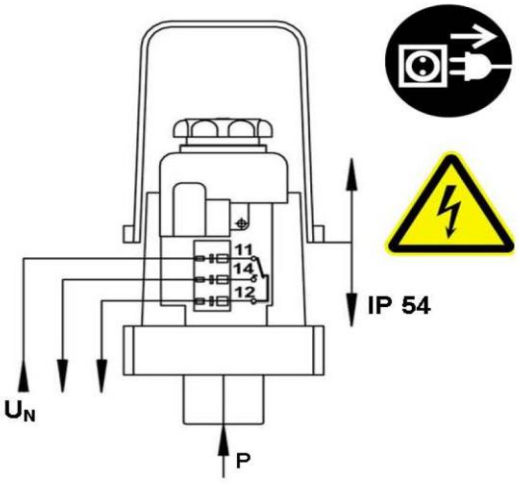
10.4.1 Description of the pressure switch

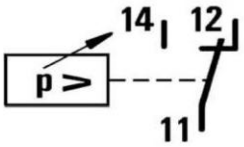
Montageanweisung
Operating Instructions
Instrucciones de Montaje
Instructions de Montage
Instruzioni d'impiego

MDR 53

Steuerdruckschalter / Control pressure switch

The relevant standards for running and installing electrical appliances are to be observed. Installation and connection by skilled personnel only, after installing accessories function of device to be checked by skilled personnel only.

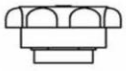




EN/IEC 60947 - 5 - 1 (AC-15)			
I_e	I_{the}	NH00/gL	U_e (50/60 Hz)
4 A	10 A	10 A	250 V~

CAUTION: Pressure setting is only possible when applying pressure to the switch

Cut-out pressure p_o



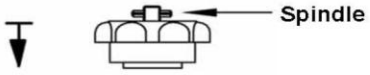
p_o lower: turn wheel to the left

p_o higher: turn wheel to the right

Differential Δ_p

$\Delta_p = p_o - p_u$

Press wheel downwards



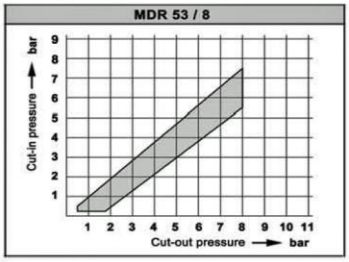
Δ_p lower: turn wheel to the right

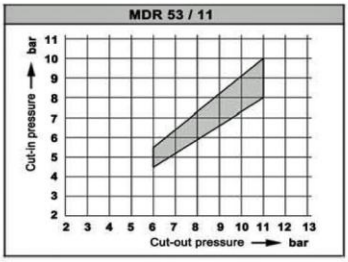
Δ_p higher: turn wheel to the left

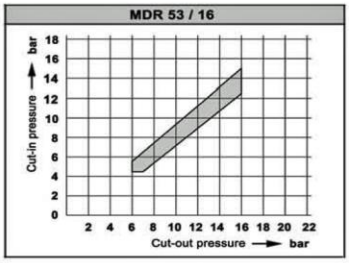
If the spindle moves when turning, lowest possible Δ_p has been reached. In order to loosen, turn wheel to the left holding the spindle tight.

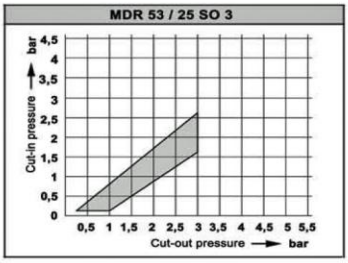
Page 1 of 2

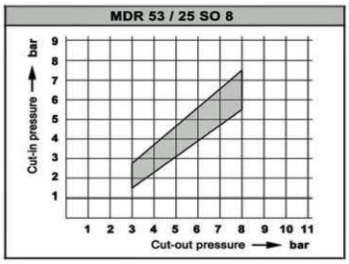
Pressure Diagrams MDR 53











02.11.2005

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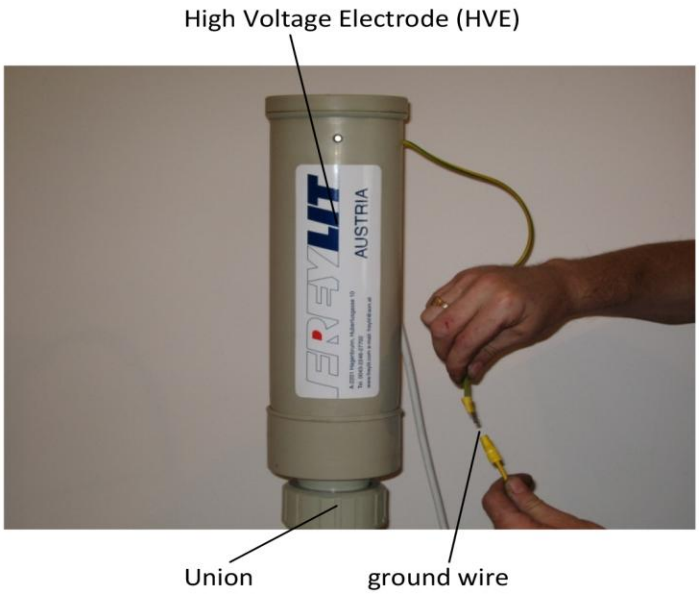
10.5 Cleaning the High Voltage Electrode (HVE)

every 6 month

ATTENTION:

TURN OFF THE MAIN SWITCH OF THE RECYCLING UNIT !!

1. Turn Off the main switch of the recycling unit
2. Disconnect the Ground wire to the electric circuit section of the HVE
3. Open the union of the HVE
4. Pull out the HVE from the PP-pipe (treatment part)
5. Clean the rod of the HVE by using a piece of cleaning rag
6. After cleaning install the HVE into the PP pipe again and tighten the union.
7. Connect the ground wire to the electric circuit section of the HVE
8. Turn the main switch back on



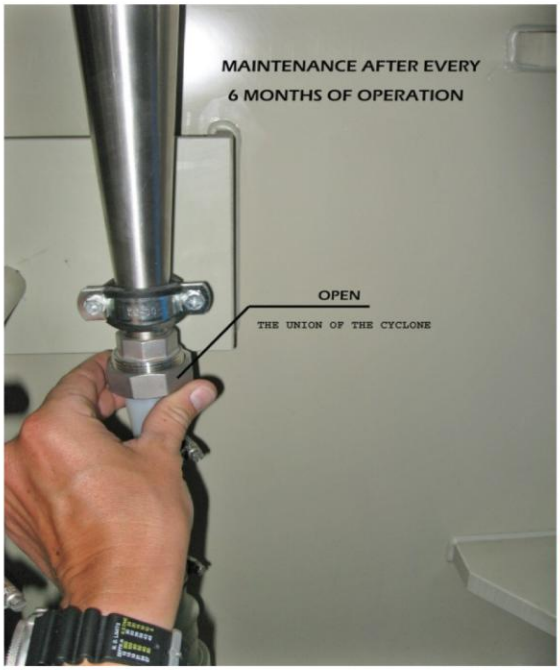
10.6 Cleaning the Cyclone

every 6 month

ATTENTION:

TURN OFF THE MAIN SWITCH OF THE RECYCLING UNIT !!

1. Turn Off the main switch of the recycling unit
2. Open the union of the cyclone
3. Clean the nozzle with water before reinstallation
4. Repeat this workflow for each cyclone
5. Turn the main switch back on.



10.7 Checking the pressure in the air dome

every 6 month

ATTENTION:

TURN OFF THE MAIN SWITCH OF THE RECYCLING UNIT !!

1. Turn Off the main switch of the recycling unit
2. Open the sample taking tap in the recycling water pipe to consumer and let the water drain, until the pressure in the recycling water pipe to consumer is at 0.
3. Close the sample taking tap.
4. Check the pressure inside the air dome using a tire air pressure gauge
5. The pressure inside the air dome must be 2,5 bar = 36 psi
6. If the pressure is different, use a tire inflating device to adjust the correct pressure.
7. Turn the main switch back on.

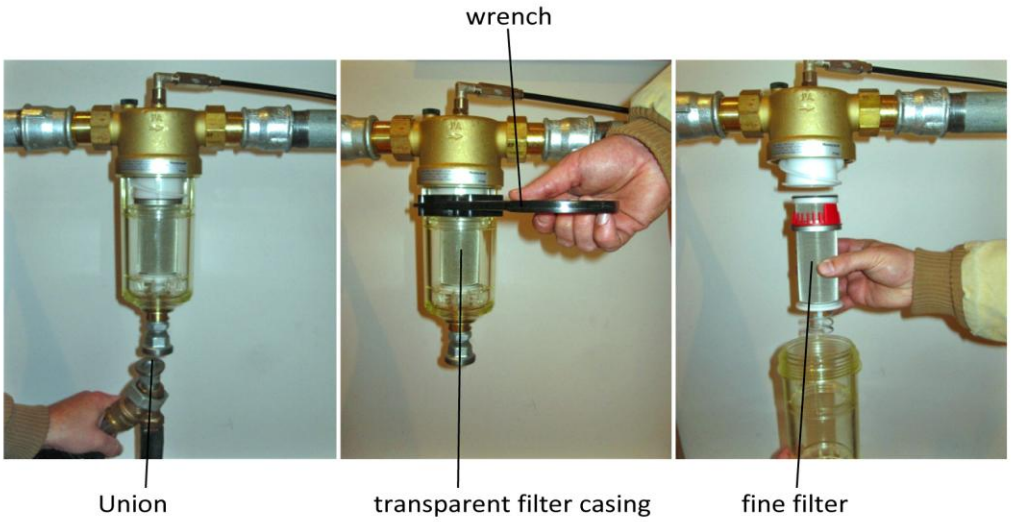
10.8 Cleaning the fine filter

On demand

ATTENTION:
TURN OFF THE MAIN SWITCH OF THE RECYCLING UNIT !!

If the fine filter is completely clogged up (no water pressure after the filter), the fine filter need to be cleaned by taking it out.

1. Turn Off the main switch of the recycling unit
2. Open the sample taking tap in the recycling water pipe to consumer and let the water drain, until the pressure in the recycling water pipe to consumer is at 0.
3. Close the sample taking tap.
4. Open the union at the bottom of the filter casing.
5. Open the transparent filter casing by using the supplied wrench.
6. Take the fine filter out and clean it.
7. Reinstall the fine filter and tighten the transparent filter casing.
8. Tighten the union at the bottom of the filter.
9. Repeat this workflow for each filter.
10. Turn the main switch back on.



10.9 Cleaning the screen of the sludge pump in the underground tank

every 6 month

ATTENTION:

TURN OFF THE MAIN SWITCH OF THE RECYCLING UNIT !!

1. Turn Off the main switch of the recycling unit
2. Open the ball valve compressed air pipe for back-flushing the screen of the sludge pump for 3 Minutes. The dirt on the screen of the sludge pump in the underground tank is thereby purged and removed from the inside out.
3. Close the ball valve compressed air pipe for back-flushing the screen of the sludge pump after this procedure.
4. Turn the main switch back on.

Ball valve compressed air for back-flushing the screen of the sludge pump

10.10 Cleaning the reactor tank

After one year

ATTENTION:

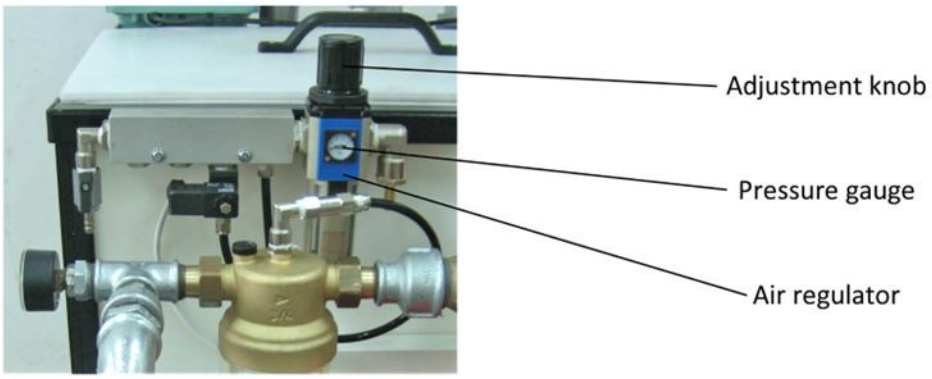
TURN OFF THE MAIN SWITCH OF THE RECYCLING UNIT !!

1. Turn Off the main switch of the recycling unit
2. Open the ball valve to empty the reactor tank completely. The water from the reactor tank drains to the underground tank.
3. Clean the inside of the reactor tank with fresh water or use a high pressure unit. During this maintenance also clean the float switches and the flotation membrane inside the reactor tank. The dirty water will drain into the underground tanks.
4. Close the ball valve after this procedure.
5. Turn the main switch back on.

10.11 Adjustment of the air regulator

Once a year

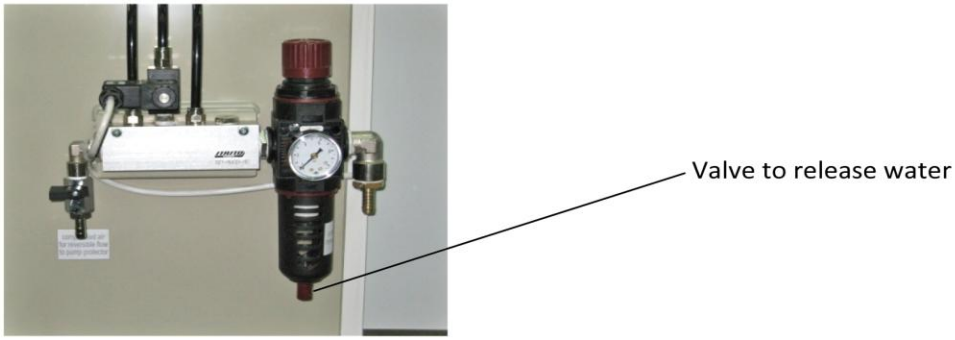
The air regulator must be adjusted to a pressure of 6,5 bar = 94 psi (see pressure gauge on the air regulator).
Adjust the air pressure by pulling up the adjustment knob and turn it left to decrease the pressure and right to increase the pressure. After the adjustment push the adjustment knob back down.



10.12 Release the water from the air regulator

On demand

Open the valve at the bottom of the air regulator to release the separated water.



PROGRAMMING MICRO 810 VARIABLES
for “WASH WATER RECYCLING UNITS”

FREYLIT WASH WATER RECYCLING UNITS

Model: CHVTP / ECOLIT-MFY

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Table of content:

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1 General

It is possible to change the timing cycles of the recycling unit. How to change variables will be explained in this manual.

In order to change variables on the controller the control panel needs to be opened and the main switch has to be turned on with opened door.

2 Safety

Programming should only be performed by qualified personal.

Errors can render the system inoperable.

Attention: Beware of electric shock.

3 MICRO 810 overview

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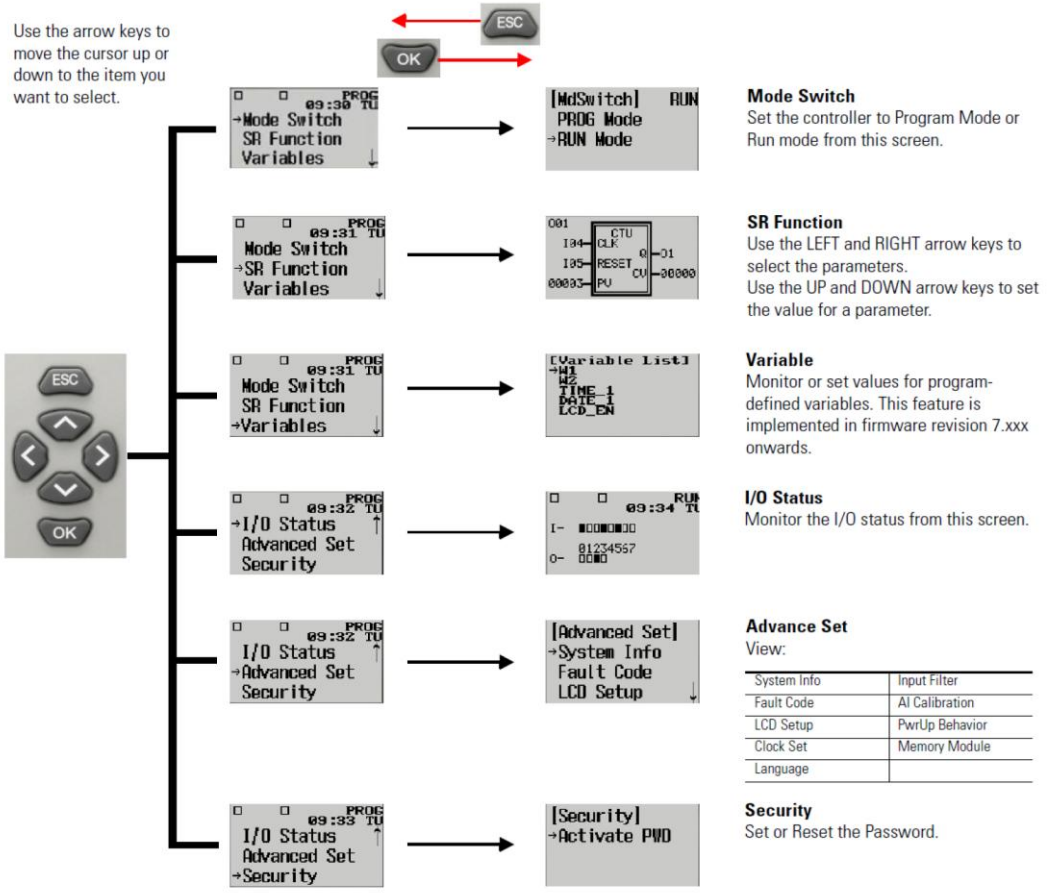
4 Main Menu overview

Access the Main Menu

Press the ESC and OK buttons at the same time to access the Main Menu screen.



Mode Switch
Set the controller to Program Mode or Run mode from this screen.

SR Function
Use the LEFT and RIGHT arrow keys to select the parameters.
Use the UP and DOWN arrow keys to set the value for a parameter.

Variable
Monitor or set values for program-defined variables. This feature is implemented in firmware revision 7.xxx onwards.

I/O Status
Monitor the I/O status from this screen.

Advance Set
View:

System Info	Input Filter
Fault Code	AI Calibration
LCD Setup	PwrUp Behavior
Clock Set	Memory Module
Language	

Security
Set or Reset the Password.

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5 Variables

'backflush_on' - duration how long filter(s) will be backflushed (standard = 20s)

'backflush_off' - duration how long backflush is paused after the car wash cycle has ended (standard = 5s)

'flooding_on' - duration of submersible pump flooding the reactor tank (standard = 30m)

'flooding_off' - duration how long flooding is paused (standard = 15m)

6 Step by Step explanation

6.1 Access the Main Menu

Press "ESC" and "OK" at the same time to access the Main Menu of the controller.

6.2 Select Variables

Press the down button 2x to choose "Variables" and press "OK".

6.3 Adjustment of Variables

Now the "Variables" can be adjusted.

'backflush_on' - duration how long filter will be backflushed (standard = 20s)

'backflush_off' - duration how long backflush is paused after the car wash (standard = 5s)

'flooding_on' - duration of submersible pump flooding the reactor tank (standard = 30m)

'flooding_off' - duration how long flooding is paused (standard = 15m)

Choose the variable you want to adjust with the up and down button and press "OK"

The TIME will be shown as

0000h00m00s000ms

h = hour

m = minute

s = second

ms = millisecond

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press “OK” again

the display will show

0000h00m00s000ms current setting

0000h00m00s000ms new setting

Choose the digit you want to change with the left and right button and use the up or down button to adjust the setting.

When adjusted press “OK”

7 Example:

We change the ‘backlush_on’ time from 20 seconds to 25 seconds.

Choose the variable ‘backflush_on’ and press “OK”

backflush_on:

TIME

0000h00m20s000ms (current setting)

0000h00m20s000ms (new setting)

	Display
Select the variable ‘backflush_on’ and press “OK”	backflush_on: TIME 0000h00m20s000ms (current setting)
press “OK” again	backflush_on: TIME 0000h00m20s000ms (current setting) 0000h00m20s000ms (new setting)
Choose the digit you want to change with the left and right button and use the up or down button to adjust the setting. When adjusted press “OK”	backflush_on: TIME 0000h00m20s000ms 0000h00m25s000ms
You will be asked “Save variable entry!” press “OK”	
The new setting will be shown on the display (top and bottom time should be equal)	backflush_on: TIME 0000h00m25s000ms 0000h00m25s000ms
Press “ESC” 4x to exit the menu.	

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8 Saving the changed Variables to the Memory Module

This step is absolutely necessary before switching off the main switch, that the modified variables are loaded after switching on again.

Before you turning off the main switch to close the control panel door, the new settings have to be saved to the memory module.

1. Press "ESC" and "OK" at the same time to access the Main Menu of the controller.
2. Choose 'Mode Switch' with the up and down button and press "OK"
3. Choose 'PROG Mode' with the up and down button and press "OK"
4. Press "OK" again
5. Press "ESC"
6. Choose 'Advanced Set' with the up and down button and press "OK"
7. Choose 'Memory Module' with the up and down button and press "OK"
8. Choose 'M800->MM' with the up and down button and press "OK"
9. Press "OK" again
10. When 'Transfer succeeded!' is shown on the display, press "ESC"

Now the variable settings are saved to the Memory Module.

The main switch can be turned off and the control panel can be closed again.

The recycling unit is now ready with the new settings.

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