

EKO-LIT Recycling Unit

for recycling wash water

from car washes

Type: EKO-LIT 50 & 100

Capacity: 50 or 100 l/min

Description, function and drawings of the complete recycling system :

EKO-LIT Recycling unit

see picture

process diagram

drawing no. *process_02*

pipng plan for **EKO-LIT** recycling unit

drawing no. *ekolit50_100_521E*

pipe connection plan

drawing no. *ekolit50_100_501E*

For installing an EKOLIT 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 can not 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 . Any large solid particles present in the water will settle in this tank. A float switch (**B1**) and a **sludge pump** encased in a pump protector, are installed in the underground tank.

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

There it passes through a **cyclone** and a **high voltage electrode** into the **reactor tank** of the ELO-LIT 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 **FREYLIT water stabilizer**, the **fine filter** (with an automatic back flush device) and the **flow switch** 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 I "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 to install 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 I “recycled water to consumer”** on the EKO-LIT Recycling unit drops from 4,5 to 3,5 bar.

If the minimum pressure is reached, the **pressure switch** on the EKO-LIT 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 EKO-LIT 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 EKO-LIT Recycling unit.

A compressed-air hose, which is installed between the pump protector and **pipe VI “compressed-air for reversible flow to pump protector”** on the recycling unit, also pass through this PVC drain pipe. The compressed air hose is required for cleaning the pump protector 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 flow switch. A signal will be sent by the flow switch to a micro controller, 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 *EKO-LIT* can recycle up to 95% of the car wash water. The rest is lost due to evaporation and carry off at the car wash. However, the actual recycling rate is determined by the ratio between recycled and fresh water use, which is determined 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 %.

POWER CONSUMPTION

	EKO-LIT 50	EKO-LIT 100
sludge pump	400V/50Hz, 2,2 A, 1,2 KW	400V/50Hz, 2,9 A, 1,6 KW
pressure pump	400V/50Hz, 2,4 A, 1,3 KW	400V/50Hz, 3,4 A, 1,7 KW
high voltage electrode	300 m Ampere	300 m Ampere

MEASUREMENTS

	EKO-LIT 50	EKO-LIT 100
length	1460 mm	1460 mm
width	780 mm	780 mm
height	1410 mm	1530 mm

DRY WEIGHT

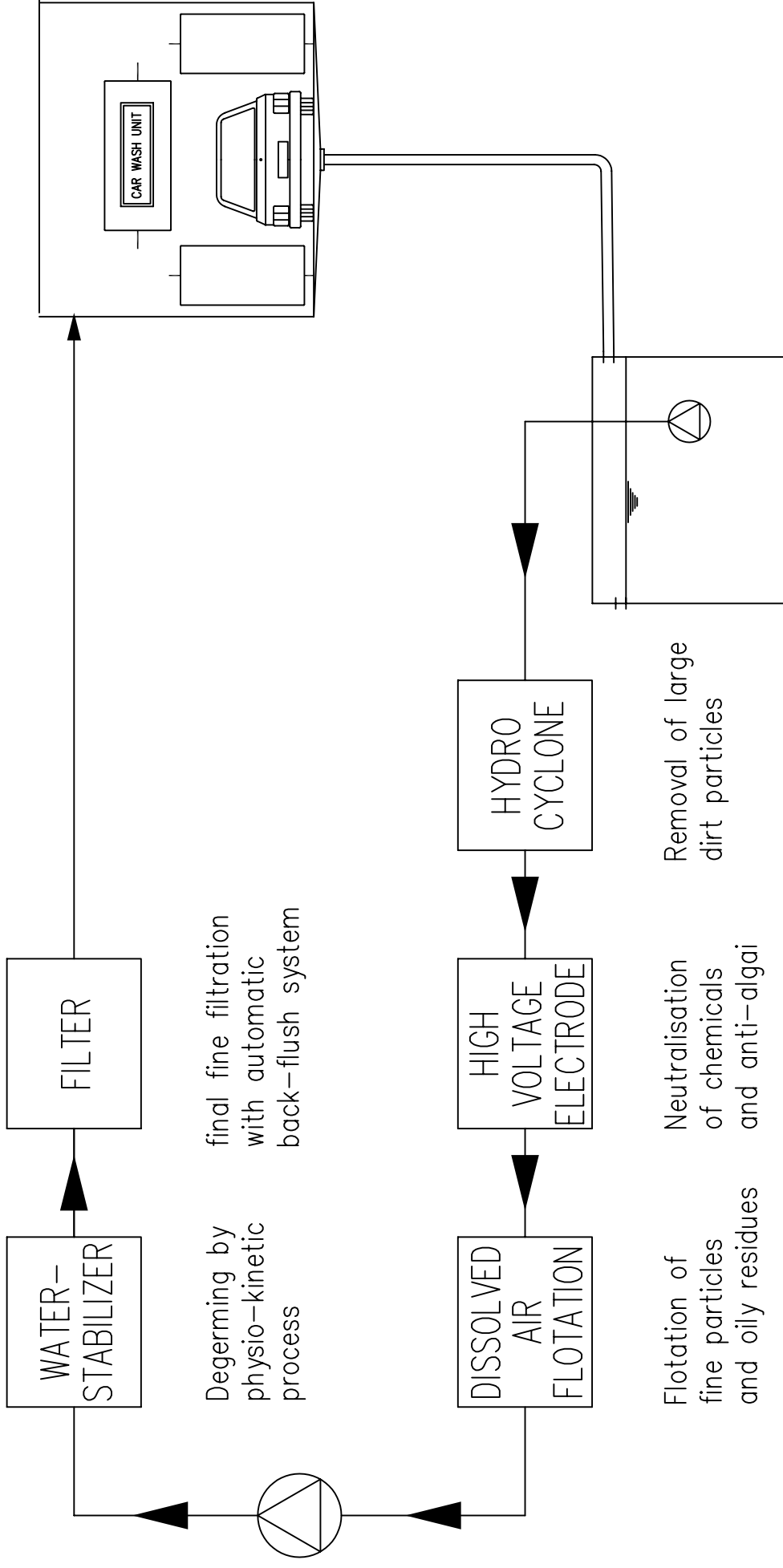
EKO-LIT 50	app. 70 kg
EKO-LIT 100	app. 100 kg

EKO-LIT 50 und 100

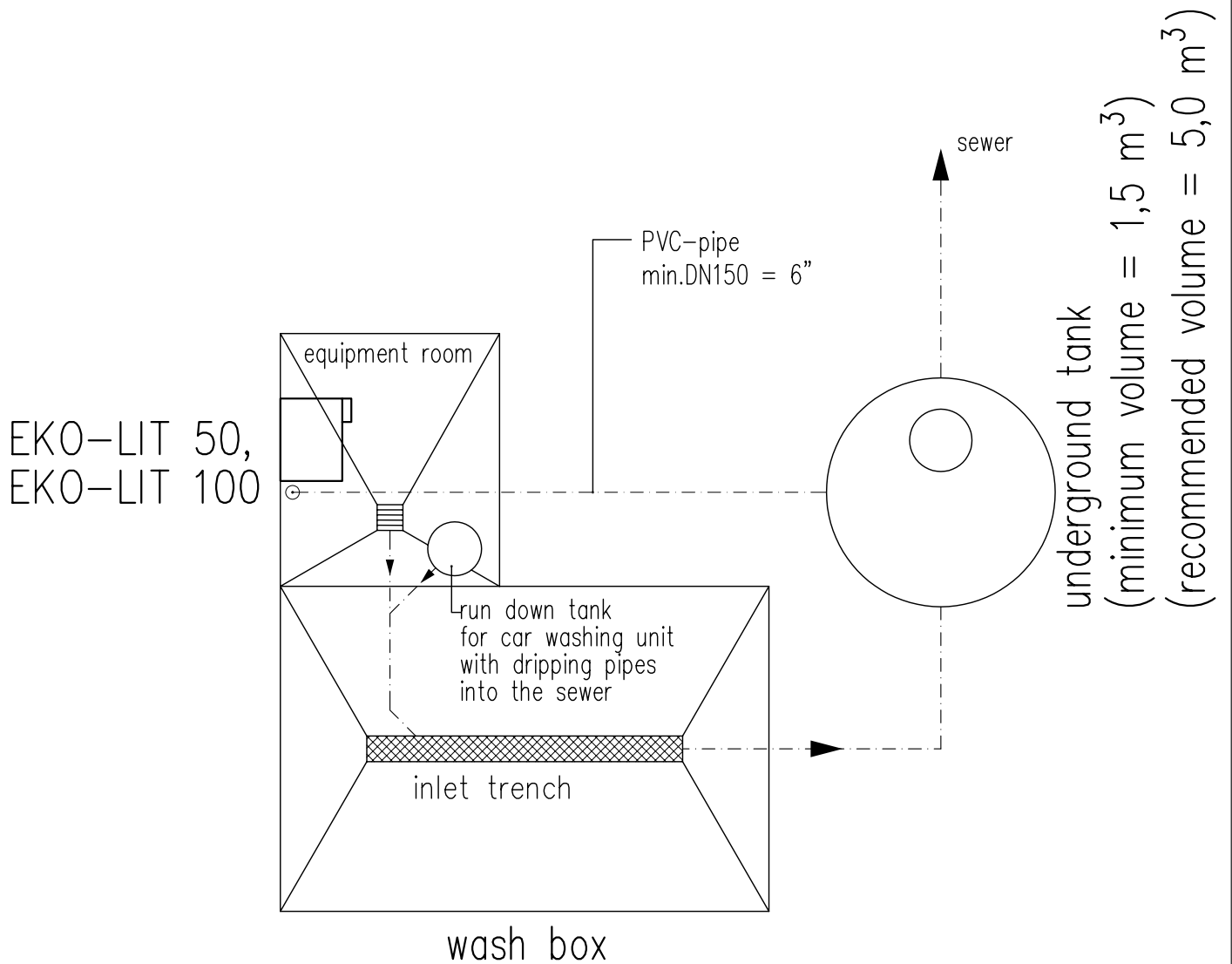


PROCESS DIAGRAMM OF EKO-LIT

”HIGH-TECH combined into an economic, compact system”

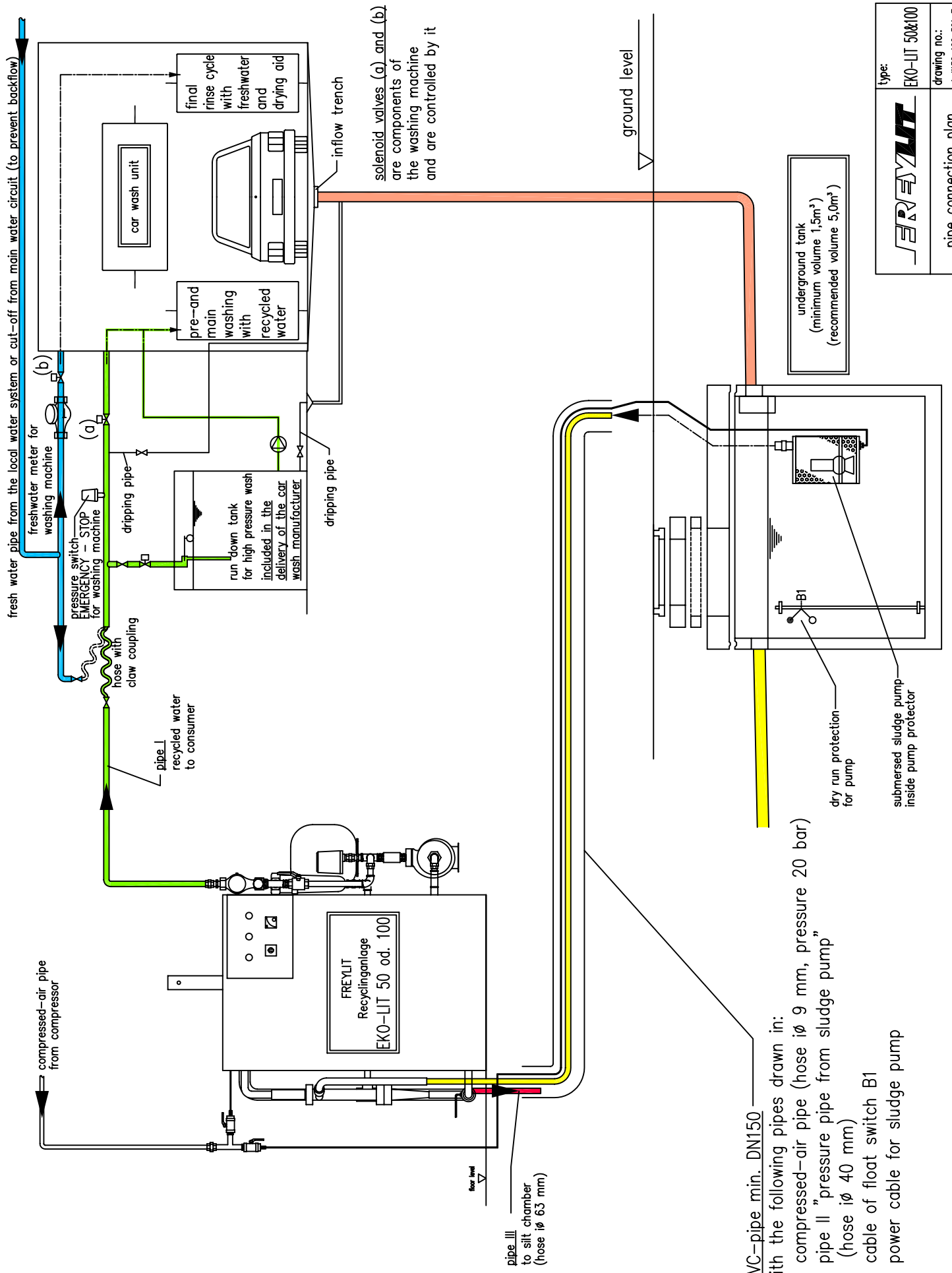


	Type:	EKO-LIT
	drawing no.:	process_02
	date:	19.11.03
pipe connection plan		EKO-LIT



all sewer pipes must be constructed freeze-proof
and are not included in delivery of FREYLIT

date:	name:	FREYLIT	EKO-LIT 50 & 100
constr.: 19.03.04	Mei		
contr.:		PIPING PLAN FOR EKO-LIT 50 and 100	
		drawing no.:	ekolit50_100_521_E
		modif.:	
		date:	



- PVC-pipe min. DN150
with the following pipes drawn in:
- compressed-air pipe (hose \varnothing 9 mm, pressure 20 bar)
 - pipe II "pressure pipe from sludge pump" (hose \varnothing 40 mm)
 - cable of float switch B1
 - power cable for sludge pump

FREYLIT	Type:	EKO-LIT 50&100
	drawing no.:	ekolit50_100_50I_E
pipe connection plan EKO-LIT 50 and 100		date: 22.03.04