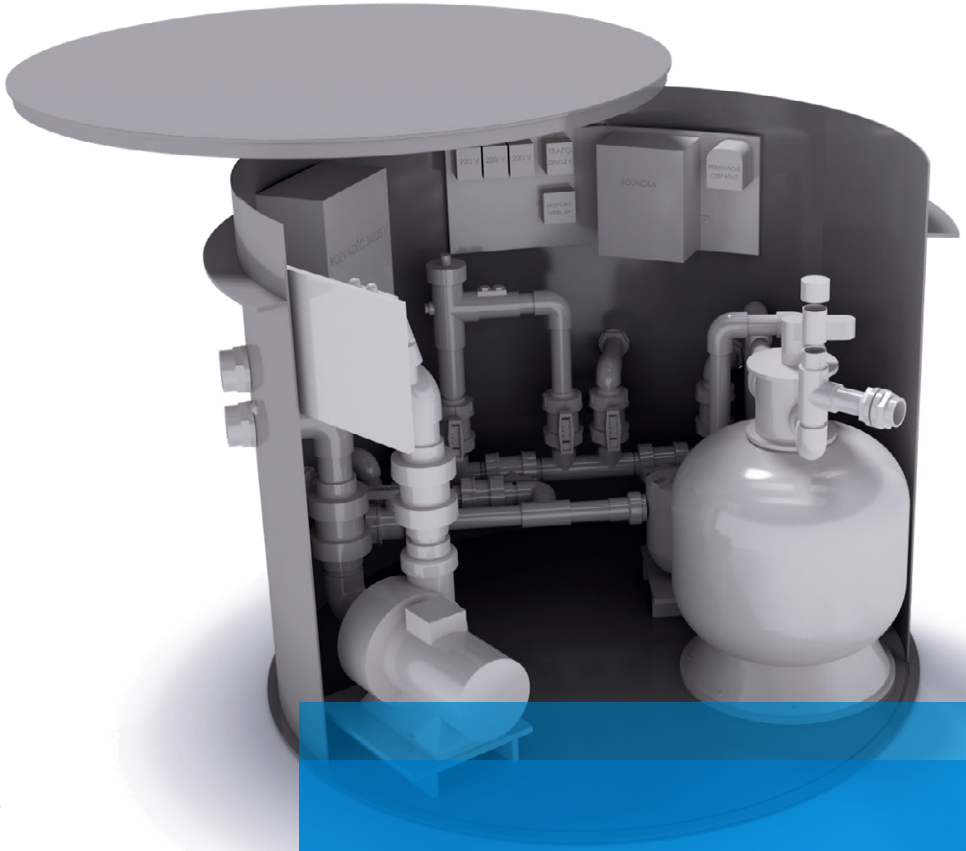
Building preparations



Technology shafts and walls

Verze: 27. 02. 2024 / Revize: 13. 01. 2025
L. V.

ALBIXON

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1. Contents

Surveying and excavation

2.

1. **Layout.**
2. **Excavation Depth.**
3. **Preparations for Placement of Miscellaneous Technology.**

Have a construction expert confirm in writing that placement at the intended location is feasible from a constructional point of view and that it does not conflict with already installed utility lines. The location of the technology must be in accordance with IEC 60364-7-702:2010.

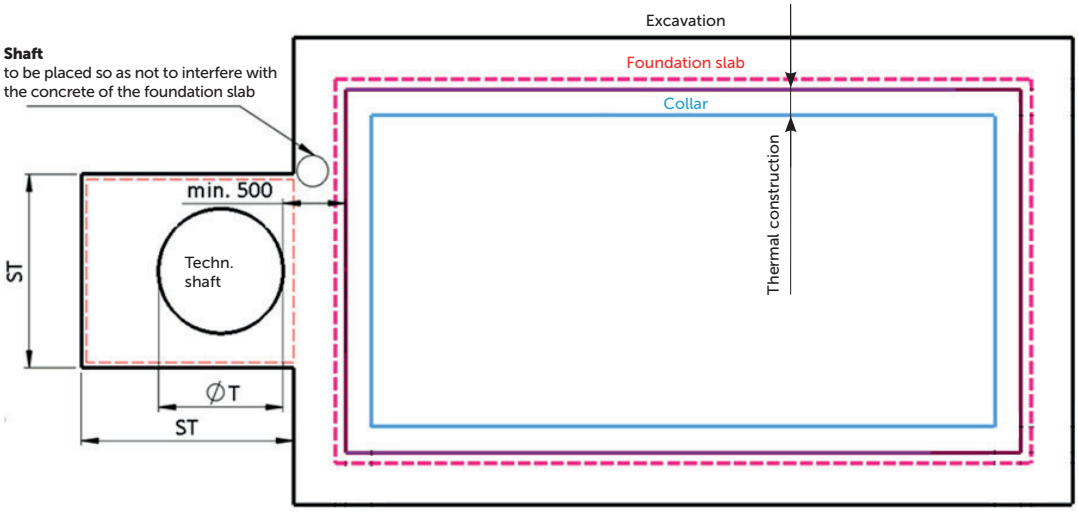
1. Layout

Excavation Width and Length for Technology Shafts

Width and length of excavation for technology shafts = +600 mm from the outer diameter of the shaft, or its outer width and length.

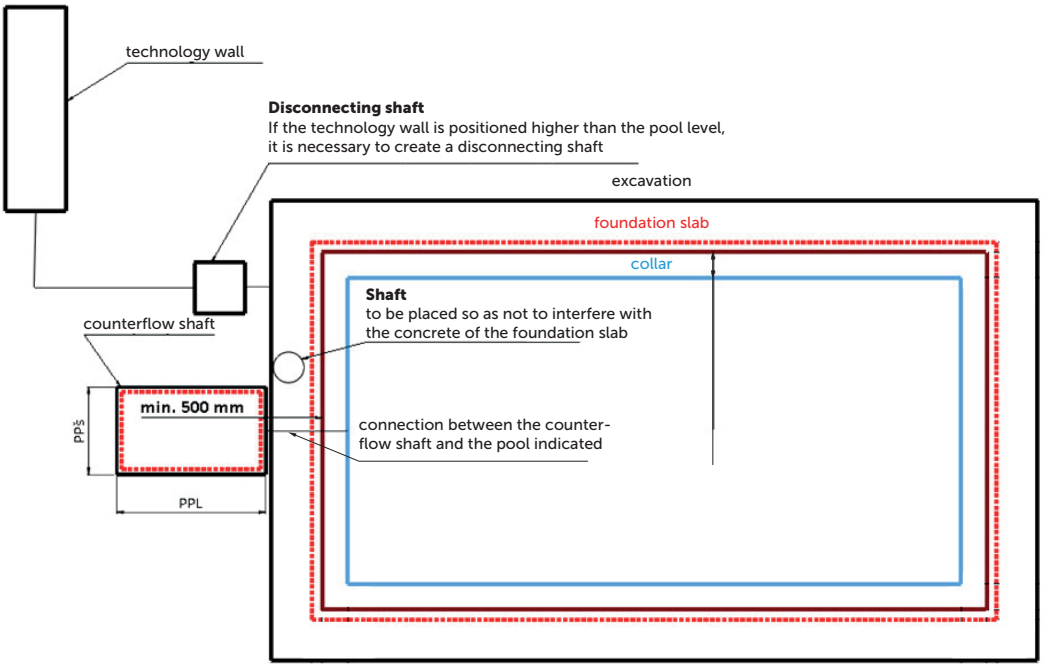
Example:	Outer shaft diameter	1265 mm
	Excavation dimensions	1865 x 1865 mm

Plan view of excavation for the technology shaft and pool (in mm)



2. Surveying and excavation

Plan view of excavation for the technology walls and pool (in mm)



CSD	dimensions of the excavation for the counterflow shaft	1050 mm
PPL		1650 mm

ST	dimensions of the excavation for the technology shaft	for shaft diameter 1200 mm ST = 1 865 mm
		for shaft diameter 1500 mm ST = 2 165 mm

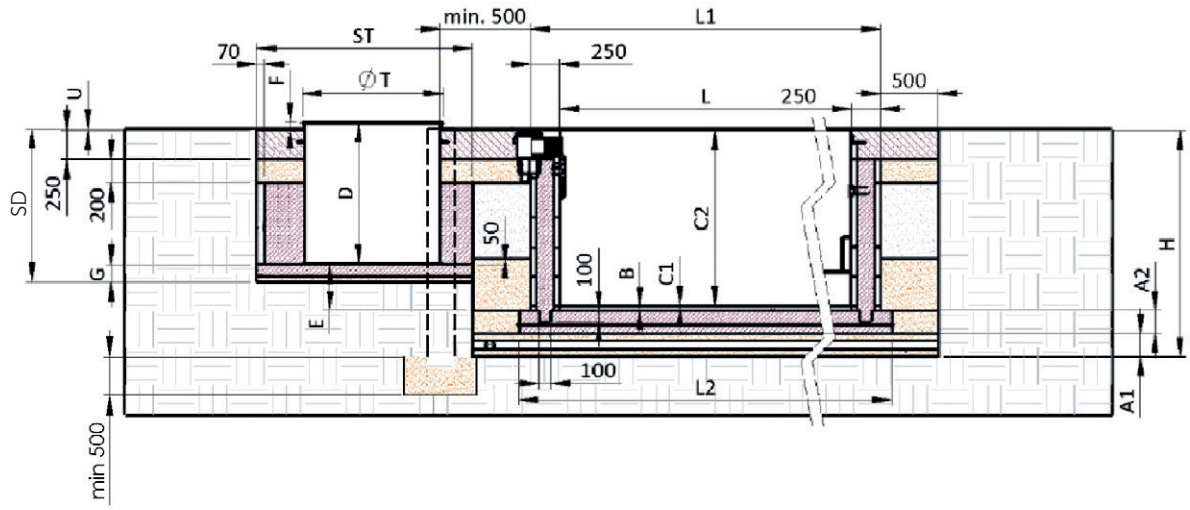
Dimensions of the base plate technological walls	width = 1680 mm; depth= 770 mm

Surveying and excavation

2.

2. Excavation Depth – Calculation.

Determine the depth of the excavation for setting the technology shaft according to the calculations below. Determine the depth of the excavation for setting the technology shaft (counterflow shaft). If the shaft is installed together with the pool, determine the height of the step (E) for the proper placement of the technology shaft. Please remember to account for the difference from the raised terrain (U). The U-value directly deals with the final height of the complete structure. Therefore, it is necessary to take into account all the construction steps performed subsequently (raised paving, recessing or raising the pool, etc.).
The upper edge of the technology shaft should be set to at least 40 mm (F) above the planned final surface around the pool (make sure it does not collide with the travelling front of the enclosure). This is to protect the shaft from rainwater. If you do not want to have the shaft elevated above the final surface level, adequate drainage of rainwater must be provided around the shaft. It is recommended not to install the shaft or wall in the area of the future enclosure rails. The bottom of the shaft is intentionally kept without thermal insulation so that the shaft is naturally 'heated' from the soil below in wintertime.



A1	gravel bed with drain pipes	200 mm
A2	concrete foundation slab with a rebar mesh	200 mm
B	bottom insulation (extruded polystyrene)	30 mm
C1	pool bottom thickness	8 mm or 6 mm
C2	pool depth	subject to the pool type
D	total depth of the technology shaft/counterflow shaft	technology shaft = 1213 mm counterflow shaft = 796 mm
E	difference in elevation between the pool foundation slab and the shaft foundation slab	(H + F) - (A1 + A2 + D)
F	elevation of the technology shaft specified by the manufacturer	40 mm
G	concrete plus gravel (gravel 50 mm; concrete 100 mm)	150 mm
H	pool excavation depth	A1 + A2 + B + C1 + C2 + (±U)
SD	shaft excavation depth	(D - F) + G + (±U)
U	thickness of paving/stone carpet/pool recess	subject to the type

2. Surveying and excavation

Excavation and Securing the Perimeter Walls.

Excavation and securing of the perimeter walls of the pit (if necessary because of the geological conditions) should be carried out exclusively by a specialized company. The excavated soil can be used for landscaping around the pool; you can count on the majority of the soil being used this way. This means there is no need to dump the soil. Landscaping around the pool refers to the pool as a structure; not always necessary.

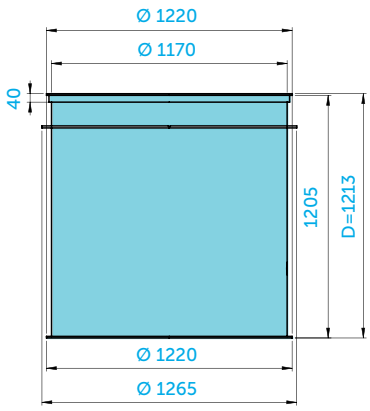
Important notice:
The contractor is responsible for securing the excavation walls.

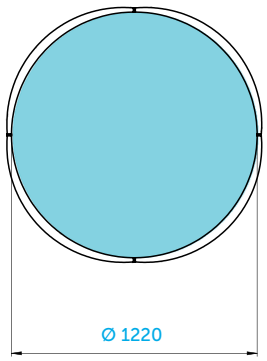
Note:
Along with the earthworks and excavation, consider connecting the pool to the sewage system on the premises. This will enable the drainage pump and pool technology to be connected directly to the discharge system, which delivers greater convenience in terms of pool maintenance, when draining water from the filtration system, etc. (Always check the local sewage regulations to make sure the pool can be connected to the sewage system.)

The following types of technology shafts may be included in the scope of the contract for work:

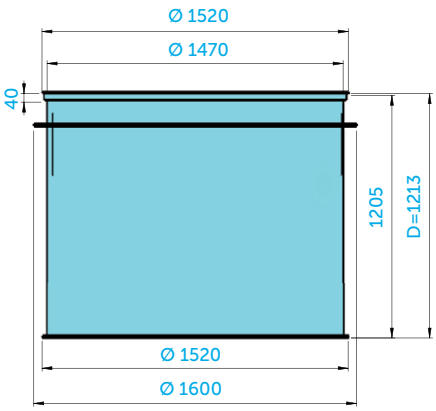
- Technology shaft with cover for installation of filtration (Ø 1200, height 1200 mm)
- Technology shaft with cover for installation of filtration and counterflow (Ø 1500, height 1200 mm)
- Technology shaft with cover for counterflow installation (1200 x 600 x 800 mm) = L/W/H

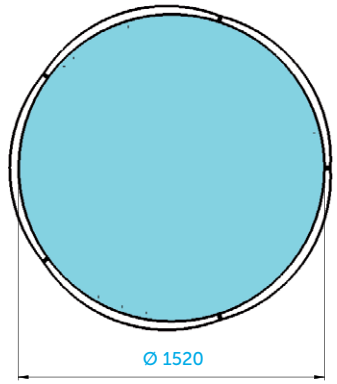
TECHNOLOGY SHAFT FOR FILTER INSTALLATION



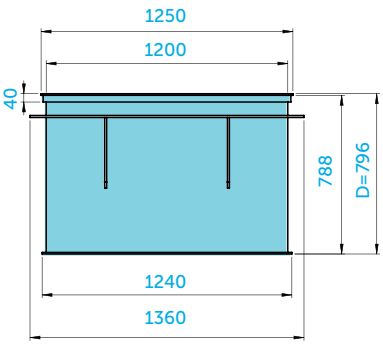


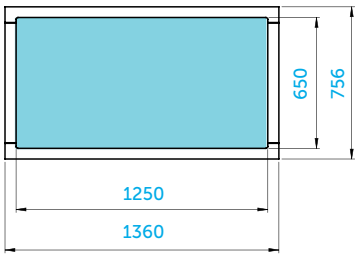
TECHNOLOGY SHAFT FOR FILTER AND COUNTERFLOW INSTALLATION





TECHNOLOGY SHAFT FOR COUNTERFLOW INSTAL-LATION





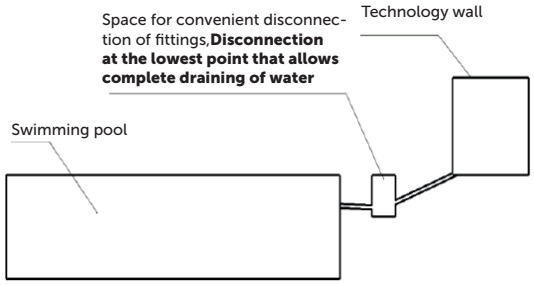
Surveying and excavation

2.

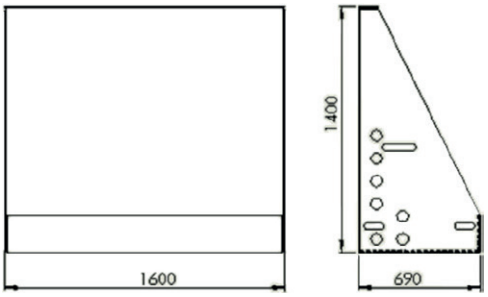
Preparations for Placement of Miscellaneous Pool Technology.

Another option for installing the technology is using an ALBIXON technology wall. The pool technology should be built in such a way as to prevent access by unauthorised persons and children. Its ambient humidity should also meet the requirements regarding the installation of electrical components.

Where the technology walls is placed above the water level in the pool, a maintenance (disconnecting) drain shaft should be created, allowing water to be drained from the piping during the winter period. The dimensions of the maintenance shaft should be of at least 500 x 500 mm (subject to the depth) and the depth should be adequate to the pipe route, however always allowing for the convenient disconnection of the pipes and discharge of water if required. For the location of the disconnect fitting, see the picture. The disconnection must be placed at the lowest point.

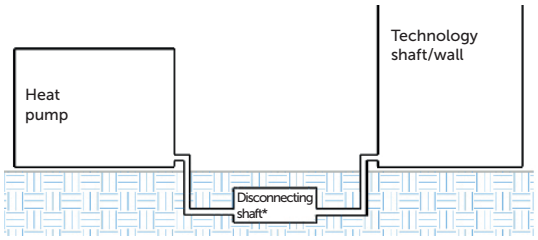


Technology wall (left, right) – a technological unit designed to be placed in a service room or in other suitable garden structure. The wall must be placed on a horizontal and sufficiently rigid base. On the side of the outlets (left or right, depending on the version), it is necessary to leave at least 500 mm of space for connections and further handling. To connect the pool technology and the pool and – if appropriate – external heating, make sure to prepare pipeline routes and penetrations of the appropriate size (pipe Ø + insulation) into the technology space (this also applies to technology installed atypically).



Counterflow device – fitted separately in the counterflow shaft, or in the technology shaft – place the counterflow shafts with the counterflow pipe along the axis of the pool, where the outlets from the counterflow mask are located. This is to achieve the lowest power losses. The maximum distance from the exterior contour of the pool shell is 2000 mm. Should the counterflow be placed away from the axis of the pool shell, its performance will be diminished.

Heat pump – to connect the pool technology and the heat pump, it is necessary to create routes for laying the connecting pipe (excavation width 200 mm at minimum, pipe slope 1.5 ° in its entire length towards the shaft). To connect the heat pump and the technology wall, it is necessary to place the disconnectors for water discharge at the lowest point of the pipe. The foundation slab of the heat pump must be sufficiently firm and horizontal. Build a concrete foundation with a height of 200 mm. Place the foundation on a gravel bed of fraction 8/16 compacted to an unfrozen depth**. The plan dimensions of the foundation should be at least 40 mm larger on each side than the outer dimensions of the heat pump. For installing the heat pump lines, we recommend placing them 30-50 cm underground.



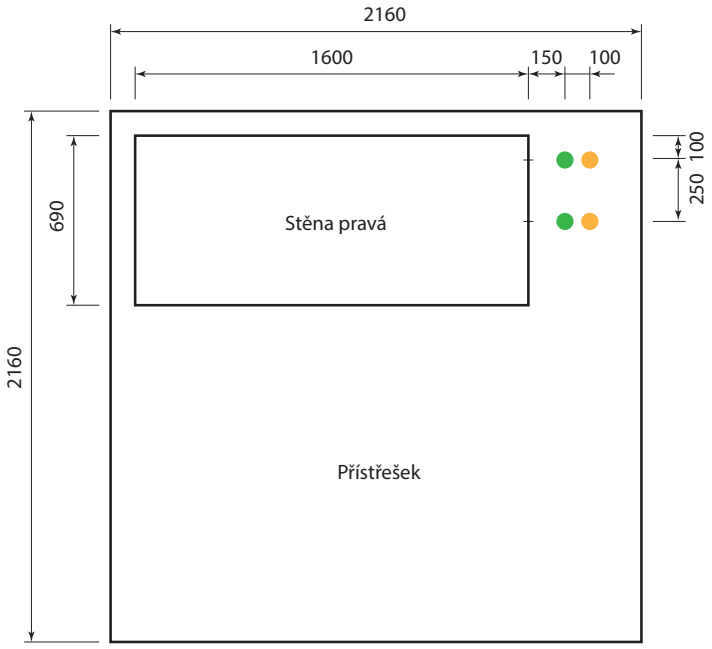
Install the heat pump in a spacious and sunny location with good ventilation. Its position must allow for smooth air circulation; see the instructions for the respective heat pump. During its operation, the heat pump may produce a considerable amount of water condensate. This needs to be accounted for and drainage must be provided. Ensure that after installation the device is in an upright position without any tilt. Do not install the device in places with the presence of contamination or corrosive gases, or where dirt or fallen leaves collect. The place where it is installed must not be near flammable or explosive environments with usual fire hazards. Observe distances from obstacles, always in accordance with the respective heat pump manual. Install the heat pump at least 3500 mm from the edge of the pool (according to ČSN 33 2000-7-702) and up to 7500 mm from the pool technology and with a vertical difference of up to 1000 mm between the water level in the pool and the bottom edge of the heat pump.

2. Surveying and excavation

Garden Shelter

If you have purchased a technical wall with a garden shelter, it is necessary to create a concrete base with the footprint dimensions of the shelter. The excavation dimensions for the base should be at least 40 mm larger on each side, so the total dimensions should be 2240 x 2240 mm. After compacting the substrate to a frost-free depth*, create a gravel base with fraction 8/16, 200 mm high. On top of the gravel base, place a concrete slab, 150 mm high, made of C 20/25 concrete. The horizontal alignment of the foundation slab should be +/- 2 mm along the entire perimeter, and +/- 4 mm in the remaining area.

Before preparing the base, consider the location of the filtration system pipe connections. The pipe can be connected through the shelter wall, exiting from the ground outside the concrete base. The second option is to connect it through the shelter floor, where the pipe must be D50, wrapped in foam insulation (mirelon) during the preparation and concreting of the base. Also, keep in mind that the pipe must be led outside the footprint of the technical wall location, so it can be connected to the side openings of the technical wall. If you are also installing a heat pump, we recommend placing it near the garden shelter, on the same side as the filtration circuit connection. This way, the pipes are led over the shortest possible distance, minimizing heat loss.



* *If the pipe is sloped towards the filtration system along its entire length, there is no need for a disconnecting shaft.*

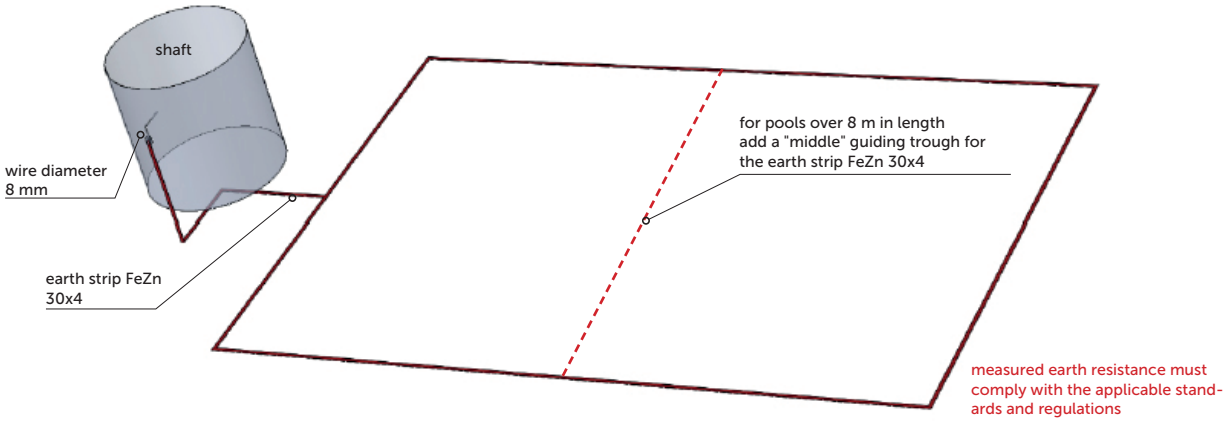
** *The non-freezing depth is a depth below the outdoor ground surface where the ground will not freeze even in the cold season. In the Czech Republic, the non-freezing depth in the construction industry is considered to be 80 to 140 cm below the ground surface, depending on the site and soil type.*

Levelling the Bottom of the Excavation and Drainage of the Foundation Slab

3.

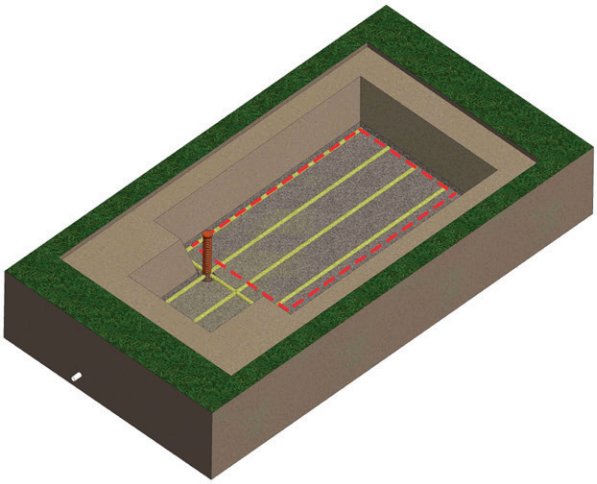
1. Installation of earth strip and drainage set.

At the bottom, around the perimeter of the excavation, it is necessary to install an earth strip according to the applicable standards. For more details on electrical wiring, see the Electrical Wiring section



The foundation slab must be permanently drained. For proper drainage of the foundation slab, it is necessary to install to a drainage set (for drainage pump shaft + drainage pump permanently connected to a power supply, see the following paragraph). Ask your construction company for the ideal design of draining the pool foundation slab and any shafts, according to the local geological conditions. Be sure, though, to account not only for groundwater but also for rainwater, which may have equally negative effects on the shaft skeleton as a whole, such as groundwater.

Drainage pump shaft – a pipe with a diameter of approx. 300 mm placed vertically (perpendicular to the foundation slab). Pour gravel with an 8/16 grain size onto the bottom of this pipe. There must be a height difference of at least 500 mm between the gravel and the final level of the foundation slab. The drainage set (pipe) serves as a reservoir for groundwater and rainwater accumulation and must be fitted with a submersible pump. This pump must trigger automatically when the water level in the drainage set rises and must be permanently connected to the power supply via an underground cable. The supply cable must run from the house switchboard, and yet it must not be connected through the switchboard in the technology shaft. The pumped water must flow out of the pool area and must not return under the pool.



4. Base plate and concreting

1. Gravel Bed and Foundation Slab of the Technology Shaft

Place a layer of 50 mm of 8/16-grade gravel in the prepared excavation that has been compacted down to non-freezing depth*. Over the compacted gravel bed, pour a 100-mm layer of C 20/25 concrete. For drainage, the concrete foundation should be sloped at 1% towards the drainage pit.

2. Gravel Bed and Foundation Slab of the Technology Wall

Prepare the gravel bed at the site selected on the basis of the parameters outlined above. The gravel bed must be placed over soil compacted down to non-freezing depth*. The minimum thickness of the gravel bed must be 100 mm; use 8/16-grade gravel. Over the compacted gravel bed, build a concrete foundation with a thickness of 200 mm using C 20/25 concrete.
The plan dimensions of the concrete foundation should be at least 40 mm larger on each side than the outer dimensions of the technology wall.

Note:
The plane of the concrete bed should be above the level of the surrounding ground to prevent flooding, for example, in the event of heavy rainfall.

3. Concreting of the Technology Shaft (if part of the contract for work)

The technology shaft is to be fitted with a brick or concrete lining. The lower part of the technology shaft must be anchored in concrete and then lined with concrete in a layer about 150 mm thick up to the top plastic collar, which must be concreted into the base plate for the final surface. The technology shaft can be protected against damage by geotextile. Depending on local conditions (changes between shade and sun, etc.), it is necessary to insulate the inner surface of the shaft cover with polystyrene at least 30 mm thick. This insulation will prevent the condensation of moisture on the inside of the cover. The shaft interior should be dry and ventilated. To ensure this, place a support under the shaft lid so that air can flow between the edge of the shaft wall and below the cover. These measures are the responsibility of the user with regard to the local conditions in which the shaft is located.

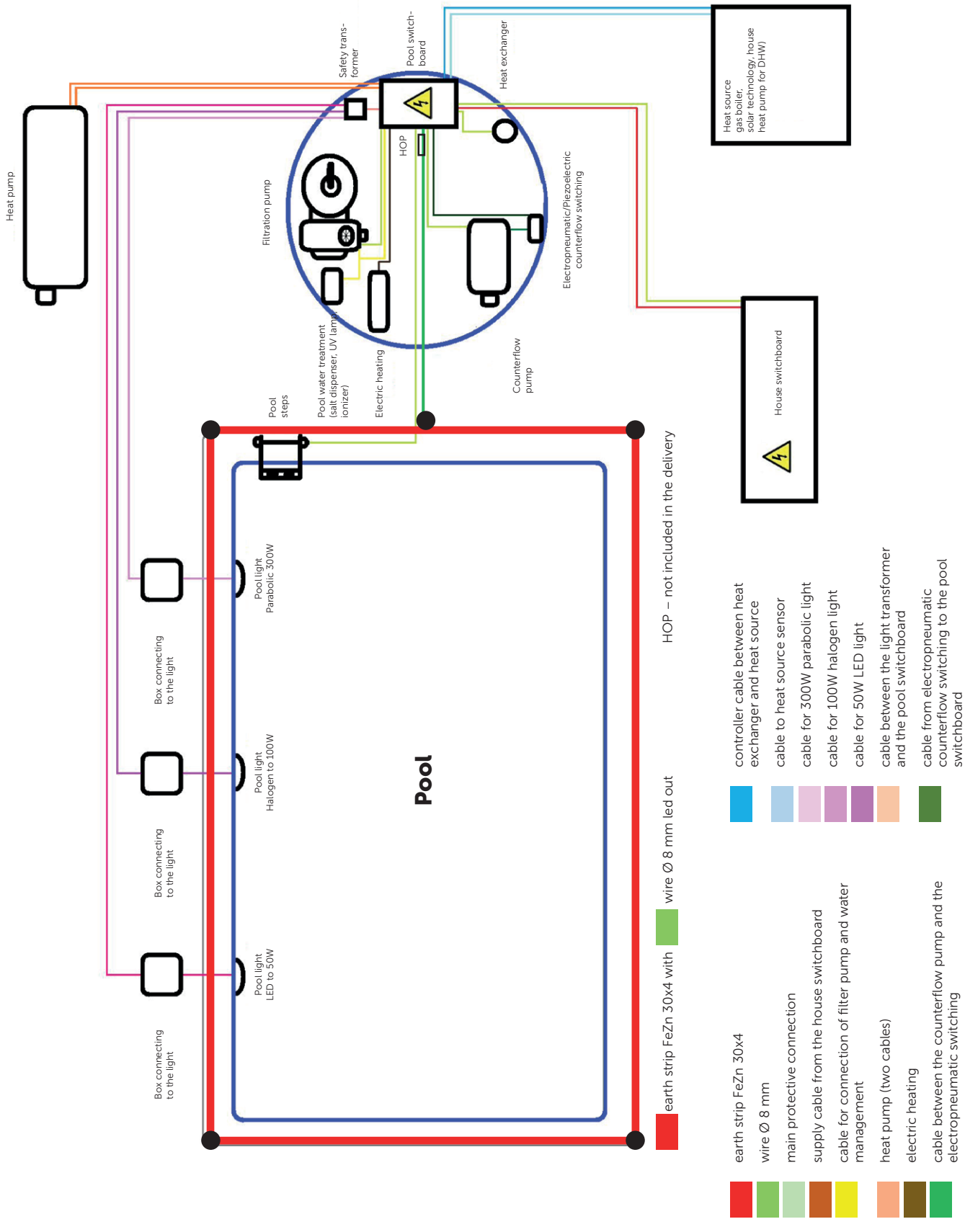
4. Laying the pipes

Pipes connected in the ground from the pool to the technology shaft/wall must be laid in a sandy bed with a minimum covering of 100 mm above and below the pipe, thanks to which any pressures on the pipe are equalised. Provide the pipe with suitable insulation, e.g. a Mirelon sleeve, with a thickness of 10 mm to prevent mechanical damage to the pipe. The sand bed must be provided from the duct transition to the technology shaft (or up to the outlet at the technology wall) up to the piping outlet from the pool. The sand bed must be free of stones and clay. Vehicles must not pass over the locations of pipes or they must be sufficiently protected by the customer.
Before backfilling, it is recommended to protect the pipe against mechanical damage, e.g. using a Mirelon sleeve.

* *The non-freezing depth is a depth below the outdoor ground surface where the ground will not freeze even in the cold season. In the Czech Republic, the non-freezing depth in the construction industry is considered to be 80 to 140 cm below the ground surface, depending on the site and soil type.*

Electrical Wiring

5.



5. Electrical Wiring

Filtration; XHPFD(PLUS) 60–140 thermal pump without counterflow

- CYKY 3 J x 4 + CY 6 ZŽ supply cable (main protective connection, hereinafter "HOP") including current protector with residual current 30 mA
- 20A/1/B supply cable circuit breaker
- 25A/3/B main house circuit breaker

Filtration; XHPFD(PLUS) 60–140 thermal pump with counterflow

- CYKY 5 J x 4 + CY 6 ZŽ supply cable (main protective connection, hereinafter "HOP") including current protector with residual current 30 mA
- 20A/3/B supply cable circuit breaker
- 25A/3/B main house circuit breaker

Filtration; XHPFD(PLUS) 160–200tri thermal pump with counterflow

- CYKY 5 J x 6 + CY 6 ZŽ supply cable ("HOP") including current protector with residual current 30 mA
- 25A/3/B supply cable circuit breaker
- 32A/3/B main house circuit breaker

Filtration; XHPFDPLUS 200 thermal pump with counterflow

- CYKY 5 J x 6 + CY 6 ZŽ supply cable ("HOP") including current protector with residual current 30 mA
- 40A/3/B supply cable circuit breaker
- 50A/3/B main house circuit breaker

The listed cross-sections of the supply cables are recommended for a distance of up to 25 m between the pool and house distributor. If the distance is greater, the cross-section of the supply cable must be increased accordingly.

The supply cable from the house switchboard to the technology shaft must be provided by the customer before the ordered components are delivered. The supplier does not provide the connection of the supply cable from the house switchboard to the technology shaft. The supply cable must be revised for the connection to the technology shaft. The supplier does not perform the revision of the supply cable. In order to be able to connect the supply cable to the pool technology distributor, it must have a length of at least 1.5 M at the point of connection.

Counterflow pump cables

- CYSY 5 J x 1.5 cable from the counterflow pump to the electropneumatic switching
- CYA 6 ZŽ cable for HOP of the counterflow pumps
- CYKY 5 J x 2.5 cable from the electropneumatic switching of counterflow to the pool switchboard
- 10A/3/C circuit breaker in the pool switchboard

Cables for the filtration pump without pool water treatment (salt dispenser, UV lamp, ionizer)

- CYKY 3 J x 1.5 cable from the filtration pump to the pool switchboard
- 4A/1/C circuit breaker in the pool switchboard

Cables for the filtration pump with pool water treatment (salt dispenser, UV lamp, ionizer)

- CYKY 3 J x 1.5 cable from the filtration pump and the pool water treatment to the pool switchboard
- 6A/1/C circuit breaker in the pool switchboard

Cables for pool lights

- CYKY 3 J x 2.5 cable between light up to 50W and transformer for lights
- CYKY 2 J x 4 cable between light up to 100W and transformer for lights
- CYKY 2 J x 6 cable between light up to 300W and transformer for lights
- the circuit breaker in the pool switchboard for the light transformer is to be determined according to the final sum of the values (W) of the lights

Electrical Wiring

5.

Cables for the heat pump XHPFD(PLUS) 60–140
- CYKY 3 J x 2.5 cable between heat pump and pool switchboard
- 20A/1/C circuit breaker in pool switchboard

Cables for the heat pump XHPFD(PLUS) 160
- CYKY 3 J x 4 cable between heat pump and pool switchboard
- 20A/1/C circuit breaker in pool switchboard

Cables for the heat pump XHPFDPLUS 200
- CYKY 3 J x 6 cable between heat pump and pool switchboard
- 32A/1/C circuit breaker in pool switchboard

Installation requires modification of the wiring of the Albixon technological shaft/wall switchboard, we recommend an individual consultation with an electrician.

Cables for the heat pump XHPFDPLUS 200 tri
- CYKY 5 J x 2,5 cable between heat pump and pool switchboard
- 16A/1/C circuit breaker in pool switchboard

Installation requires modification of the wiring of the Albixon technological shaft/wall switchboard, we recommend an individual consultation with an electrician.

Cables for heat exchanger
The cable to the temperature sensor between the pool switchboard and the heat source is provided by the heat source manufacturer. The control cable to the heat source is CYKY 5 J x 1.5.
The heat exchanger must be connected to the main protective connection (HOP).

Cables for electric heating
- CYSY 5 J x 2.5 cable for 3kW heating and 10A/3/B circuit breaker in pool switchboard
- CYSY 5 J x 2.5 cable for 6kW heating and 16A/3/B circuit breaker in pool switchboard
- CYSY 5 J x 2.5 cable for 9kW heating and 20A/3/B circuit breaker in pool switchboard
- CYSY 5 J x 2.5 cable for 12kW heating and 25A/3/B circuit breaker in pool switchboard
- CYSY 5 J x 4 cable for 15kW heating and 32A/3/B circuit breaker in pool switchboard
- CYSY 5 J x 6 cable for 18kW heating and 32A/3/B circuit breaker in pool switchboard

Metal parts
In pool technology, all metal parts must be connected to HOP CYA 6 or CY 6 ZŽ

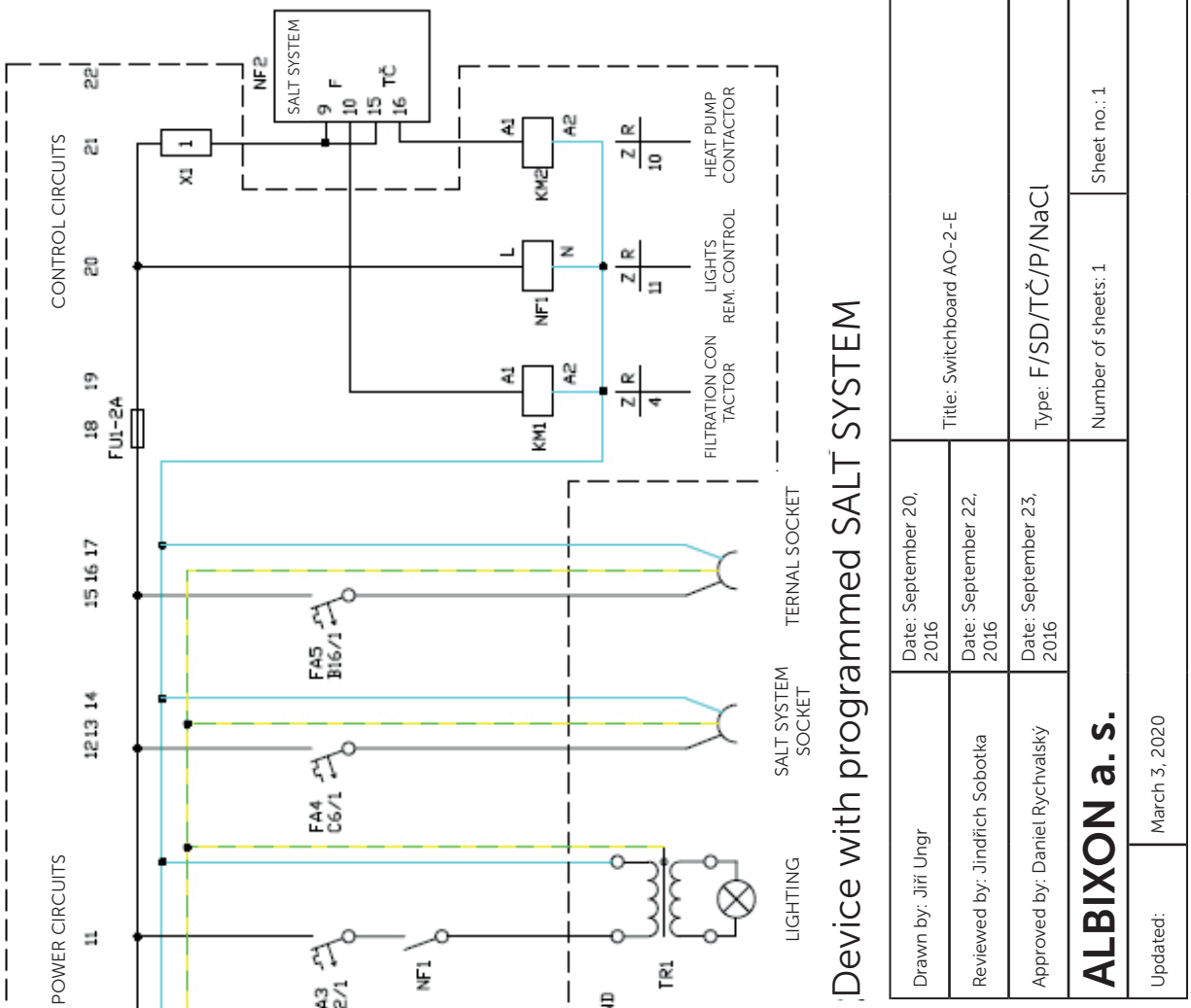
Metal pool steps and other metal components
When installing metal steps and other metal components, the connection to the HOP CYA or CY 6 ZŽ must be made, however always according to the relevant instructions for the given accessory.

SAFETY RECOMMENDATIONS
We recommend protecting the power supply circuit of the pool technology with a trip coil with a probe, which disconnects the power supply circuit when the shaft is flooded with water (up to max. 10 cm).

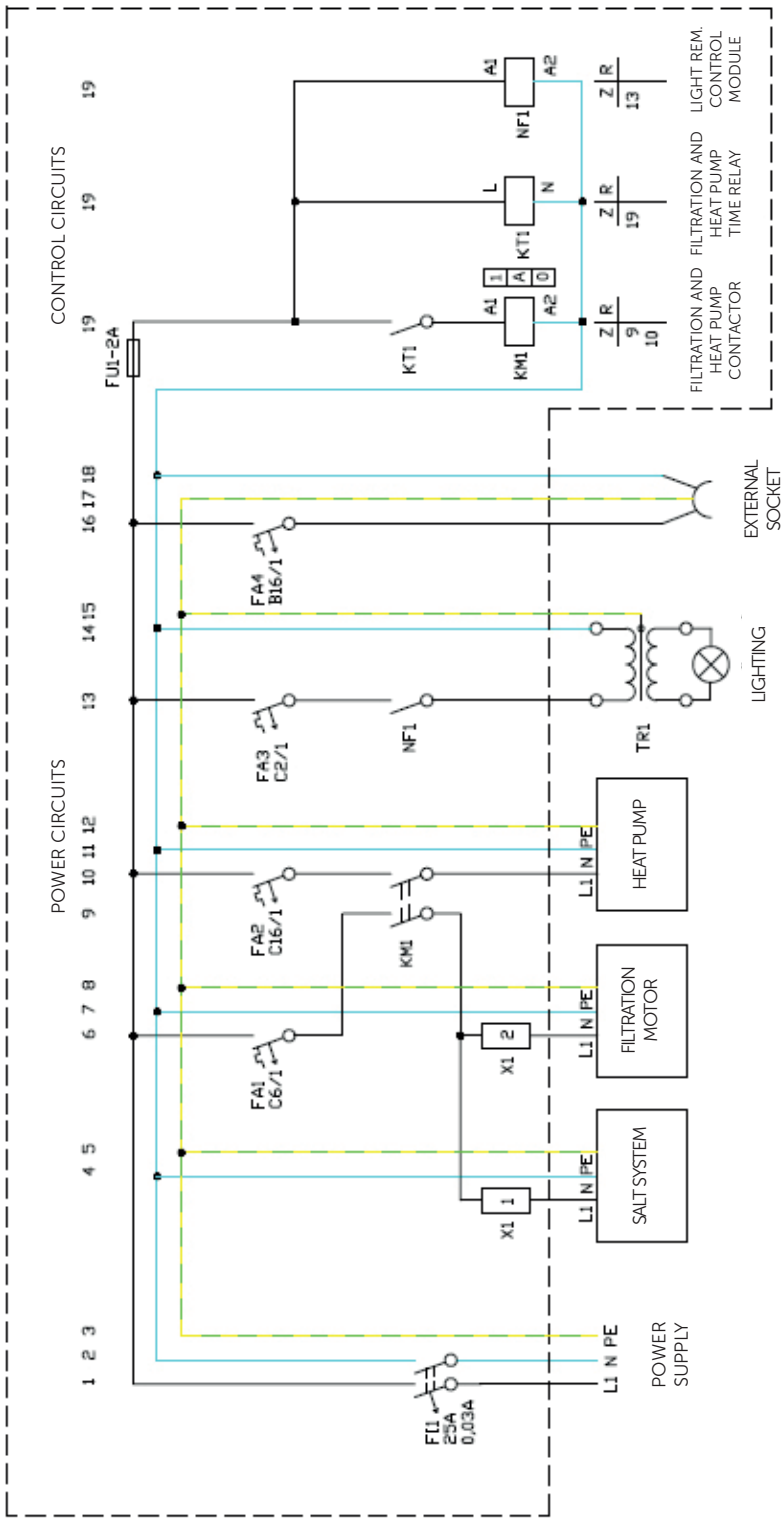
Notes
During the preparation for construction, do not forget to consider the potential future development of your pool and technology. If there are power cables or other networks leading to the pool, also consider laying network cables for better connectivity of your technology, or you can make the necessary preparations for a heat exchanger, automatic filler, and other accessories, the installation of which would otherwise mean interference with your garden. If you are uncertain about whether or not you intend to expand your pool as suggested above but do not wish to leave anything to chance, bring at least one additional sleeve protector to the pool for a potential future use of these networks.

The rating of the current protector of the pool switchboard (FI1) should correspond to the circuit breaker on the supply cable on your home's switchboard.

5. Electrical Wiring



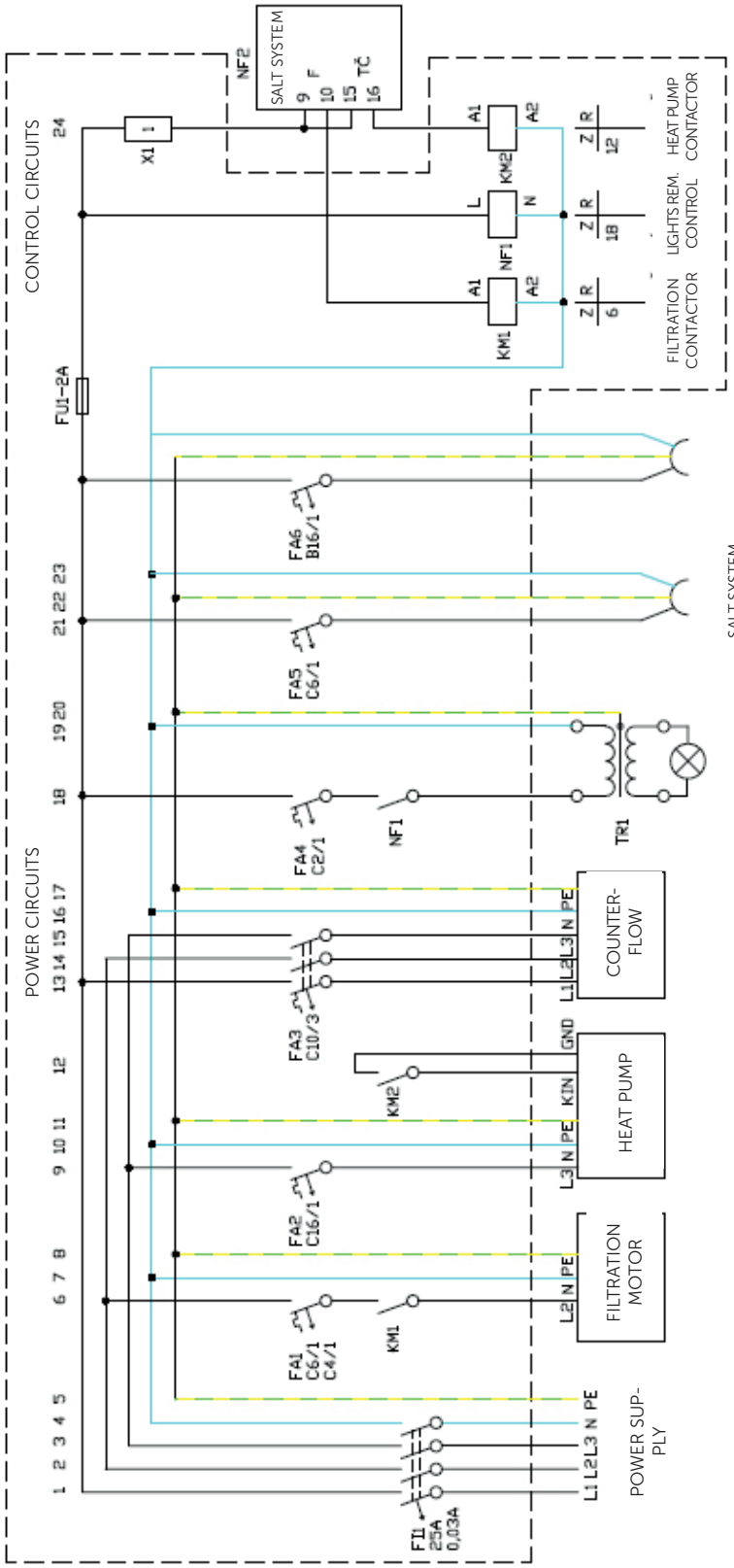
Electrical Wiring



Drawn by: Jiří Ungr	Date: September 22, 2016	Title: Switchboard AO-1 a
Reviewed by: Jindřich Sobotka	Date: September 25, 2016	
Approved by: Daniel Rychvalský	Date: September 26, 2016	Type: F/SD/TČ/P/NaCl
ALBIXON a. s.		Number of sheets: 1 / Sheet no.: 1
Updated:	March 4, 2020	

Key
FI1 – circuit breaker 25/2/0.03
FA1 – filtration circuit breaker according to pump output C6/1
KM1 – salt system and filtration contactor
FA2 – heat pump circuit breaker C16/1
FA3 – lighting transformer circuit breaker C2/1
FA4 – external socket breaker B16/1
TR1 – safety transformer 230V/12V
FU1 – fuse insert 2A
KT1 – filtration and heat pump timing relay
NF1 – light remote control
X1-1 salt system power supply terminal
X1-2 filtration motor power supply terminal

5. Electrical Wiring



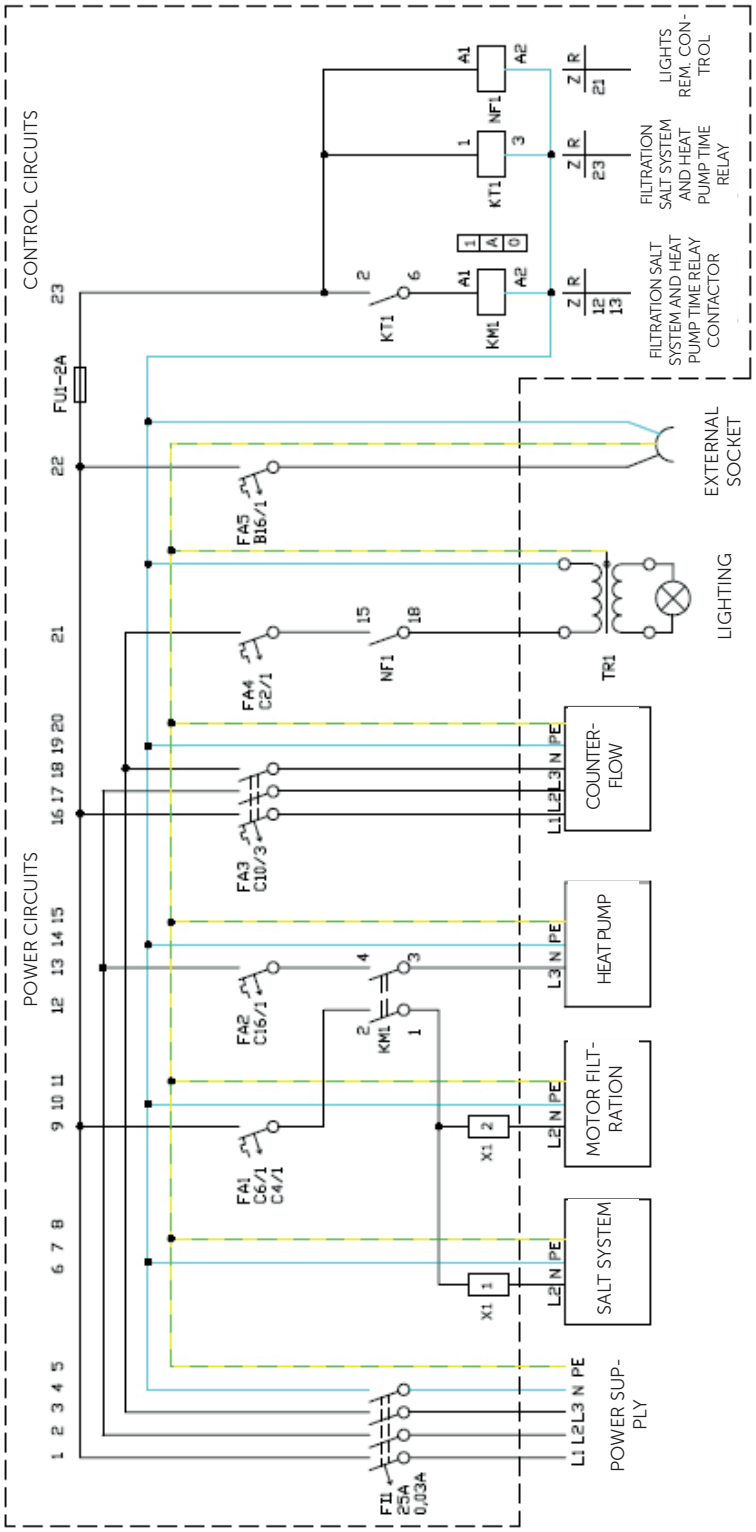
Key
FI1 - circuit breaker 25/4/0.03
FA1 - filtration circuit breaker according to pump output C6/1, C4/1
KM1 - filtration contactor
FA2 - heat pump circuit breaker C16/1
FA3 - counterflow circuit breaker C10/3
KM2 - heat pump contactor
FA4 - lighting transformer circuit breaker C2/1
FA5 - socket breaker - salt system C6/1
TR1 - safety transformer 230V/12V
FU1 - fuse insert 2A
NF1 - light remote control
NF2 - salt system control unit
FA6 - external socket breaker B16/1
XI-1 salt system power supply terminal

Device with programmed SALT SYSTEM

Drawn by: Jiří Ungr	Date: September 20, 2016	Title: Switchboard AO-2-D
Reviewed by: Jindřich Sobotka	Date: September 22, 2016	
Approved by: Daniel Rychvalský	Date: September 23, 2016	Type: F/SD/TČ/P/NaCl
ALBIXON a. s.		Number of sheets: 1 / Sheet no.: 1
Updated: March 3, 2020		

Electrical Wiring

5.



Key
FI1 - circuit breaker 25/4/0.03
FA1 - filtration circuit breaker according to pump output C6/1, C4/1
KM1 - filtration, salt system and heat pump contactor
FA2 - heat pump circuit breaker C16/1
FA3 - counterflow circuit breaker C10/3
FA4 - lighting transformer circuit breaker C2/1
TR1 - safety transformer 230V/12V
FA5 - external socket breaker B16/1
FU1 - fuse insert 2A
KM1 - filtration, salt system and heat pump contactor
KT1 – salt system, filtration and heat pump relay timer
NF1 - light remote control
XI-1 salt system power supply terminal
X1-2 filtration motor power supply terminal

Drawn by: Jiří Ungr	Date: September 20, 2016	Title: Switchboard AO-2-C
Reviewed by: Jindřich Sobotka	Date: September 22, 2016	
Approved by: Daniel Rychvalský	Date: September 23, 2016	Type: F/SD/TČ/P/NaCl
ALBIXON a. s.		Number of sheets: 1 / Sheet no.: 1
Updated:	March 5, 2020	

6. Notes

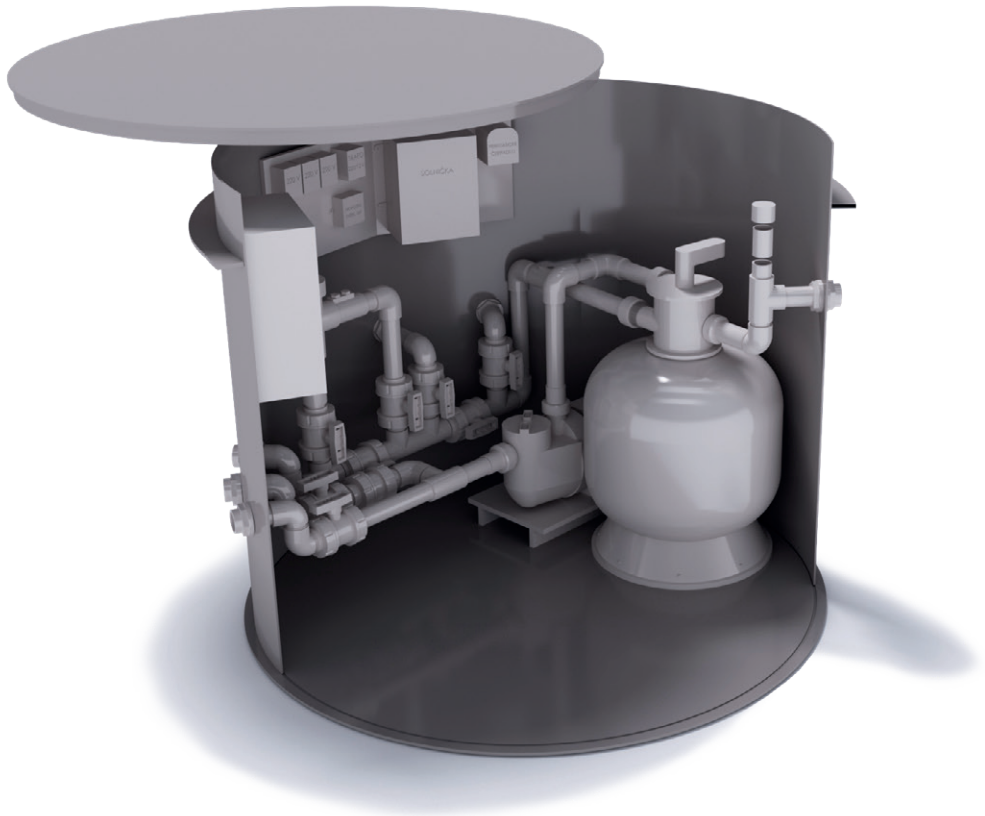
For further detailed information, see:

1. General Terms and Conditions

- https://www.albixon.cz/vsp

2. Warranty Claim Rules

- https://www.albixon.cz/reklamacni-rad/



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