Salt Water Electrolyzer

ASIN SALT

User's manual

ASEKO POOL TECHNOLOGY

Asin Salt is a microprocessor-controlled power supply and electrolytic cell for electrolysis of slightly salty water for the purpose of its disinfection. Slightly salty water is electrolyzed with an up-to-date electrolytic system to produce chlorine, which ensures complete water disinfection, destroying bacteria, viruses and algae. During the electrolysis the salt (NaCl) contained in water (4 - 8 kg m^3 of water) is decomposed into chlorine, which remains in water in the form of hypochlorous acid. Asin Salt is equipped with:

- Output indication in the range of 10 – 100%
- Indication of of the electrolyzer overloading
- Water flow monitoring, which ensures disconnection of the electrolyzer if water stops flowing through the electrode
- Safety earthing of the whole system
- A self-cleaning system of the electrodes.

The system can be operated in two ways:

- In cooperation with the filtration plant when it is switched on together with the circulation pump. In this case ASIN Salt produces chlorine during the whole filtration period. Ba measuring the chlorine concentration the length of the filtration period must be adjusted so that the free chlorine concentration is at least 0.2 mg/l and does not exceed 1 mg/l.
- In connection with the regulator ASIN Aqua S the amount of chlorine together with the pH level is automatically controlled.

Technical specification	
Power supply	230 V AC 50 Hz
Power demand	190 VA
Fuse	T 1 A
Chlorination output	5,4 – 13,5 g Cl / hour
Electrolysis output	Max 17 A 6 V DC
Output voltage	6 V DC
Overvoltage category	II
Protection	IP 20
Climatic resistance	5 – 40°C
Size (W x H x D)	250 x 160 x 130 mm
Weight	5500 g
Location	wall

Installation

ASIN Salt is installed on a wall in the distance of max. 1.5 m from the electrolyzer, which is installed in the circulation pipeline. With the electrolyzer ASIN Salt is interconnected with a cable that is a fix part of the electrolyzer. The connection of terminals is shown in the fig. 1.

ASIN Salt is a powerful source that is cooled with an internal fan. The cooling air inlet from the bottom must not be covered. Never install ASIN Salt near sources of heat or in the direct sunshine.

The power supply of ASIN Salt must be designed in such a way that ASIN Salt is switched together with the circulation pump of the filtration system.

The installation together with the regulator ASIN Aqua S is shown in the fig. 2.

The TE13 electrolyzer is installed in the outlet pipeline from the filtration system to the swimming pool. It is installed in a direct part of a DN 50 pipe by sticking of the screw union onto the pipe and subsequent screwing. The electrolytic cell is equipped with a 1.5 m long connection cable to ASIN Salt. The electrolyzer is always installed in a horizontal position in the pipeline.

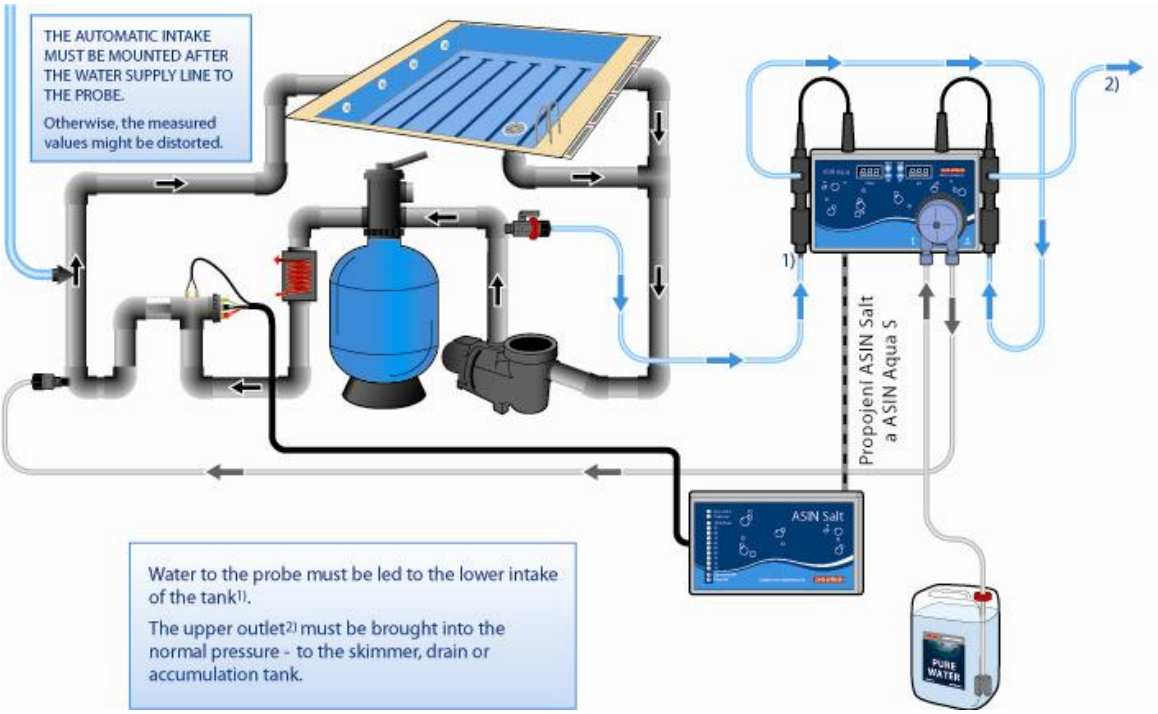

Fig.1. Connection of the ASIN Salt to the filtration circuit

Fig. 2. Electric connection of ASIN Salt

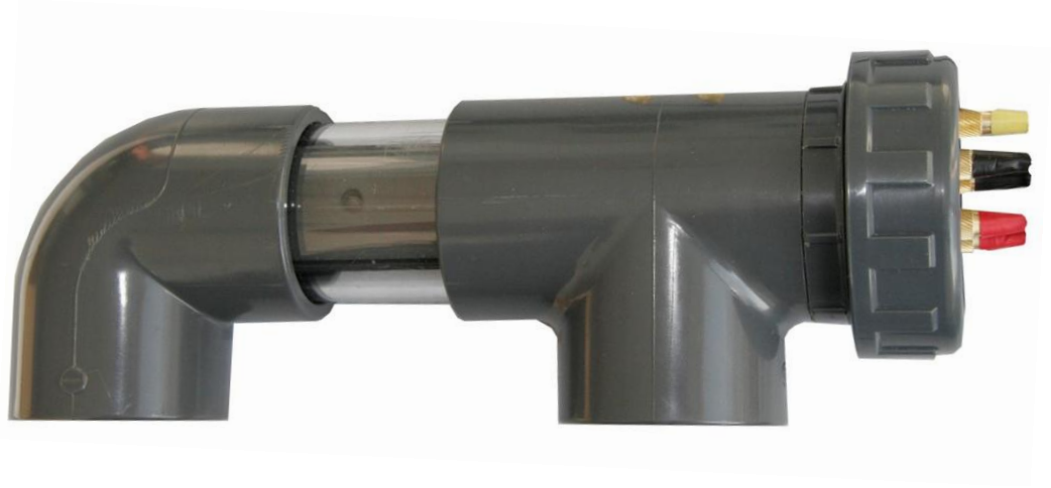

Fig. 3. The electrolyzer

Taking into operation

ASIN Salt can be operated either separately (the electrolysis is started together with the filtration plant) or in connection with the regulator ASIN Aqua S. The relevent alternative must be adjusted in ASIN Salt: After removing the front cover use the blue switch – in case of the separate operation the contacts must be in the position ON.
We recommend you to put the system in operation in clean chlorinated water.
ASIN Salt only starts to produce sufficient quantities of the disinfection agent in a few hours. As for the first chlorination the need of the disinfection agent is significantly higher than during stable operation, it may happen that ASIN Salt will not achieve the required concentration of the disinfection agent. This is why we recommend you to chlorinate the pool water by pouring approx. 30 ml of the chlorine disinfection agent per m3 of water volume. If the volume of your pool is 40 m3, pour approx. 30 x 40 = 1200 ml into the swimming pool.
Add 4 kg of salt per m3 of pool water. For example: the dimensions of your swimming pool are 4 m x 10 m and the depth of water 1 m. It means that its volume is 4 x 10 x 1 = 40 m3. The added quantity of salt is 40 x 4 = 160 kg.
Before connecting Asin Salt to the mains you must carefully let the salt dissolve. Approx. 24 hours after complete dissolution switch Asin Salt on and read its output from the stabilized bar of the LED indicators. Depending on the pool size and output find the ideal running period in the table. You can increase the output of the electrolyzer by adding more salt. 1 kg of salt per m3 of water will increase the output by approx. 10%. The maximum quantity of salt that you can use is approx. 7 kg per m3. Exceeding this limit concentration would cause overloading of the feeding part of ASIN Salt. To avoid this, ASIN Salt is equipped with automatic monitoring of the maximum current. In case of overloading it gets disconnected automatically. Before switching the system on again you must dilute the pool water.
Never use salt concentrations lower than 2 g per litre - it significantly reduces the operating life of the electrodes. Higher concentrations than 7 g / litre are very corrosive and besides overloading of the feeding part of ASIN Salt they can cause corrosion of the swimming pool equipment. The table shows the recommended electrolyzer output for the particular swimming pool volume and the running period of 8 hours a day.
The production of chlorine depends on the salt quantity in water and water temperature. The lower the water temperature, the lower is the production of chlorine.

Output (%)	g Cl / hour	Max. pool volume
40	5,4	20
60	8,1	30
80	10,8	40
100	13,5	50

After checking the chlorine content in the swimming pool reduce or increase the running period accordingly.

You should realize that the specified figures represent average values. The need of disinfection is materially influenced by such factors as:

- Temperature
- Sunshine intensity
- Number of swimming people
- Rain
- Organic pollution.

It is very difficult to find a versatile setting covering all operation modes of the swimming pool. This is why we recommend you to connect ASIN Salt to ASIN Aqua. In this case the concentration of disinfection is controlled by a chlorine sensor and pH is maintained on the optimum level.

- Never switch ASIN Salt on unless at least 2 g of salt per litre of water are dissolved in the pool water. The electrodes would get damaged. The optimum level is 4 - 7 g / litre.
- The quantity of produced disinfection is based on the quantity of salt in water (electrolyzer output indicated by the yellow LED's on the front panel) and operation period of ASIN Salt.
- ASIN Salt must not be connected to the mains before complete dissolution of salt in the pool.
- The electrolytic cell may only be connected to ASIN Salt when the equipment is off.

Type of salt to be used

We recommend you to use vacuum salt without added iodine.
You must not use mineral salt or salt with added substances against sintering. All additives may considerably reduce the life of the electrode.
Since the salt content must be kept within 2 and 7 g/m3, it is necessary to regularly check it. The concentration of salt in water changes very little due to the entire operation of the electrolyzer. Principal losses of salt result from filter washing, spilling out and heavy rain in the case of outdoor pools.
The table I shows how much salt must be added to increase the concentration in the left column to the optimum concentration of 4 g / l.

Obsah soli	Objem bazénu v m3									
	10	15	20	25	30	35	40	50	60	70
0	40	60	80	100	120	140	160	200	240	280
0,25	37,5	56,25	75	93,75	112,5	131,25	150	187,5	225	262,5
0,5	35	52,5	70	87,5	105	122,5	140	175	210	245
0,75	32,5	48,75	65	81,25	97,5	113,75	130	162,5	195	227,5
1	30	45	60	75	90	105	120	150	180	210
1,25	27,5	41,25	55	68,75	82,5	96,25	110	137,5	165	192,5
1,5	25	37,5	50	62,5	75	87,5	100	125	150	175
1,75	22,5	33,75	45	56,25	67,5	78,75	90	112,5	135	157,5
2	20	30	40	50	60	70	80	100	120	140
2,25	17,5	26,25	35	43,75	52,5	61,25	70	87,5	105	122,5
2,5	15	22,5	30	37,5	45	52,5	60	75	90	105
2,75	12,5	18,75	25	31,25	37,5	43,75	50	62,5	75	87,5
3	10	15	20	25	30	35	40	50	60	70
3,25	7,5	11,25	15	18,75	22,5	26,25	30	37,5	45	52,5
3,5	5	7,5	10	12,5	15	17,5	20	25	30	35
3,75	2,5	3,75	5	6,25	7,5	8,75	10	12,5	15	17,5
4	0	0	0	0	0	0	0	0	0	0

Table I. The salt addition to achieve the salt content of 4 g/m3

The operating life of the electrodes

The electrolytic cell is made of titanium coated with a special layer of ruthenium and iridium. During the electrolysis this layer is consumed. The life of the electrolytic cell depends on the following parameters:

- Water pollution
- Water temperature
- Salt content
- Output

The life of the electrolytic cell is reduced by:

- Low content of salt
- Water temperature below 10°C
- Low water flow
- Too hard water
- The pH level under 7.5

Cleaning of the electrodes

During the operation the electrodes are gradually polluted by deposits from hard water which must be perodically removed. The clogging of the electrodes causes the output decrease, i.e. at unchanged salt content the current decreases (observed by the number of lit diodes on the fromt panel). In this case the systém must be switched off, electrodes taken out and for about 10 minutes plunged into the solution for the electrodes cleaning. The whity coating should disappear and the electrodes can be returned back.

Maintenance

Neither ASIN Salt nor the electrolyzer TE13 require any maintenance. However, both device are situated in a corrosive environment and therefore it is necessary to check, eventually clean the elctric connections.
The electrolyzer must be kept in the temperare above zero, **water inside may in no case freeze!**

Ocupational safety

ASIN Salt may operate persons without electronic qualification.
Removing covers and exchanging any of the machine's parts is forbidden. To clean the machine, use a cloth dampened with water or detergent. Use ethyl alcohol to remove stubborn stains. The use of other organic solvents is forbidden, as well as the use of any cleaners that would cause abrasion of the surface of the plastic case or the front cover.
Persons working with Asin Salt must be informed that using the machine in a manner not intended by its manufacturer can render ineffective the electrical safety features of the device.

!!! WARNING !!!

All of the chemicals used for water quality treatment are caustic. Do not allow them to come in contact with your skin! Wear rubber gloves and work with all due care when refilling chemical supplies and when changing pump tubes. Stains on clothing from these substances will cause irreparable damage! Always obey the safety instructions for the individual chemicals (see the safety sheets) when handling them or performing repairs.

Guarantee

The manufacturer is liable for defects of the ASIN Salt equipment and electrolytic cell for 2 years from the date of sale. If this date is not credibly evidenced, the guarantee period starts on the production date indicated on the production label.
The manufacturer is not liable for defects caused by the operation of ASIN Salt in contradiction with the manual as well as for defects caused by inexpert installation of the equipment.

Before you call a maintenance technician to exercise the guarantee check the following point that are within the scope of your responsibility.

- The power supply is functional
- The equipment is installed in accordance with the manual
- Water has the correct pH parameters and content of salt
- The electrolytic cell is clean
- There is a sufficient water flow through the electrolytic cell
- The fuse of the device is OK.