CONTENT

1. GENERAL

You have made a far-sighted, economical and practical choice with our stainless steel swimming pool.

The material stainless steel has proven itself over decades. It is the most resistant, durable and efficient material in modern pool construction technology.

In order to be able to guarantee you problem-free and easy maintenance of your stainless steel swimming pool, we ask you to observe and comply with the following care and operating instructions.

We cannot assume any warranty for damage resulting from disregard of our operating instructions!

The operation and maintenance of a swimming pool requires a multitude of specific chemical processes.

In order to prevent undesirable side effects, before using chemical products you should observe their composition, the corresponding safety instructions, safety data sheets and the protective regulations according to the GUV in their respective valid version.

If you read this manual carefully, you may get the impression that maintaining a stainless steel swimming pool is a "science". In fact, the opposite is true, it is certainly by far the easiest pool to maintain.

However, with this operating and maintenance manual we want to address all questions that may arise in order to provide you and your operating personnel with a comprehensive guide.

2. CHEMICAL RESISTANCE

2.1. technical room, filter room

In case open filters or splash water pools are used in connection with stainless steel pools, the following must be observed: A common air space of open filters, open splash water pools **with the outside of the pool must be avoided at all costs**, as a concentration of chlorides contained in the atmosphere will cause lasting damage to the pool.

If structural constraints do not permit local separation, the required condition shall be achieved by installing a partition wall or by covering these containers as tightly as possible. A sufficient forced ventilation and venting to the outside reduces the probability of corrosion.

2.2. Filled pool

For the material stainless steel no coating is required as corrosion protection. Stainless steel has an invisible passive layer, which is mainly formed by the alloying element chromium in combination with oxygen, and is therefore corrosion resistant. If the passive layer is damaged, it rebuilds automatically under the influence of oxygen.

Under normal operating conditions, high-alloy steel is completely resistant to most water. As is the case with any material, there are certain limits when using stainless steel. Under special influences or conditions (e.g. filling water highly contaminated with chlorides, water treatment plants that do not comply with standards), special tests are required to select the material.

In this respect, we refer to the standards and legal regulations concerning the "Treatment and disinfection of swimming pool and bathing pool water" (Germany: DIN 19643, Austria: Austrian bathing hygiene law no. 254/1976 in the currently valid version, ÖNORM M 6215 to 6217, Switzerland: SIA 385/9) as well as the permissible qualities of filling and pool water.

In the case of chloride and sulphate contaminated filling water, we will advise you on the choice of material on the basis of the chemical water analysis provided by you.

- **Special filling waters:**

  Special examinations are required for pools with sea water, mineral water and medicinal and therapeutic pools. Special guidelines adapted to the respective material must be observed.

2.3. Limit values

The operation of the water treatment plant must be carried out in such a way that the following values are maintained at the usual pool water temperature (max. 32°C) in the pool water:

TABLE 1

Material- No. **Short name**	**1.4301** **X5CrNi18-10**	**1.4404** **X2CrNiMo17-12-2**
pH value free chlorine mg/1 Chlorides mg/1	6.8 to 7.6 0,3 to max. 0,6 max. 200	6.8 to 7.6 0,3 to max. 0,6 max. 500

The operator of the bathing facility has the obligation to regularly check and document the values listed in Table 1 for compliance (pH value and free chlorine daily, chlorides every 3 weeks).

This must be done with approved and calibrated measuring instruments or with the aid of a laboratory for water analysis.

In case of deviations, an immediate message to our company is necessary in order to be able to avert damage to the pool with appropriate measures.

If chloride concentrations are too high, an immediate, intensive water exchange is absolutely necessary, which can be achieved by adding plenty of fresh water, e.g. after filter backwashing. Corrosion damage to the pool - without proof of compliance with the permissible chloride concentration or the pH value - cannot be accepted as defects in the sense of the warranty.

2.4. Note on water treatment

General:

The water treatment is carried out with the help of physical and chemical process steps.

In addition to disinfection, the generic term water treatment includes above all pH value regulation, algae control, flocculation, filtration and also the addition of fresh water.

2.4.1. pH value correction

At pH values above or below the values given in Table 1, the disinfecting effect of chlorination is impaired. In addition, undesirable side effects occur, especially if the pH value is too low, the material resistance is negatively affected. A correction of the pH-value - lifting / lowering - is absolutely necessary. A too high or too low pH-value can harm your bathing guest.

Lower pH value:

Under no circumstances may hydrofluoric acid or chloride-containing acids (such as hydrochloric acid) be used.

This leads to the permissible chloride concentration being exceeded and subsequently to the destruction of the material structure. Sulphuric acid, for example, is permissible.

Raise pH value:

This can be done by adding soda or caustic soda in liquid form.

2.4.2. Flocculants

Aluminium-based flocculants in liquid form are permitted.

Flocculants containing chloride should be avoided. In case of doubt, please contact us for clarification (stating the chloride content and the dosing quantity in relation to the circulation rate).

2.4.3. Germicides

The continuous addition of chlorine-containing substances for disinfection until the values for free chlorine listed in Table 1 on page 3 are reached is permitted.

Any addition of chlorine- or chloride-containing chemicals that are not used for disinfection is prohibited, either continuously or intermittently.

2.4.4. Fresh water / chloride content

The fresh water addition of 30 litres per bathing guest per day, as provided for in the standards, is usually suitable for meeting the limit values for chlorides.

If this is not sufficient for reasons arising from ongoing operation, the fresh water addition must be increased to such an extent that the chloride limit values are complied with.

Remember that high chloride levels damage all metal parts installed in the water circuit.

2.4.5. Algae Destruction

If a modern water treatment system is used, algae prevention/prevention agents are not required due to the fact that the stainless steel pool has a non-porous surface and our pool hydraulics ensure excellent distribution of pure water.

Algae destruction agents containing heavy metal salts, such as copper sulphate and those containing silver or mercury, must also not be used in stainless steel pools. They are in any case questionable from the point of view of waste water law.

Here too, everything that harms the metals in your water cycle also harms your bathers.

Before using algicides (= quaternary ammonium compounds), please contact your water rights authority.

2.4.6. Introduction of chemicals

Chemicals may only be introduced into the pool in dissolved, diluted form via the clean water pipe, whereby the addition must be made continuously into the clean water pipe, directly after the filters (dosing system). Circulation must be maintained for up to 24 hours after the end of chemical addition. This guarantees an absolutely even mixing.

The direct addition of chemicals directly into the pool is generally prohibited.

The desired qualitative condition of the pool water - depending on pure and raw water - can often be positively influenced by minor changes in the process or in the choice of chemicals.

In case of doubt, we will be happy to advise you and help you find the best solution for your specific case. Please contact us in confidence.

3. CARE AND MAINTENANCE

3.1. Corner emptying

We recommend an annual emptying of all pools to remove deposits and any corrosion that may have occurred (e.g. due to overlooked coins etc.), and to check all screwed components under water.

The period from pool emptying to pool filling should be kept as short as possible, i.e. only limited to the actual cleaning and maintenance time.

Special attention must be paid to this:

3.1.1. Flood

Since floods can occur at different speeds and it is not certain that existing safety devices such as groundwater lowering and flood valves in their dimensioning can sufficiently protect the pool from the amount of water that occurs, the pool must be secured by filling it up to the overflow edge in the event of an impending flood.

3.1.2. Groundwater

The maximum expected groundwater level must be at least 20 cm below the maximum pool depth or be kept at this level by suitable groundwater lowering.

Flood valves are used to ensure the safety of the emptied pool in the event of failure of facilities for lowering the groundwater table or in the event of a slow rise in the groundwater level.

3.1.3. Frost effects

The pool must not be emptied when the outside temperature is below 0°C. There is a risk of the pool substructure (foundations, gravel bed) freezing up.

Also the pool must be completely free of ice before emptying - danger of damage by ice floes!

3.1.4. Rubbers

In order to facilitate the cleaning of the pool as much as possible, it is advantageous to rinse off visible deposits with a strong water jet (pressure hose or high-pressure cleaner) during the emptying of the pool - especially in the floor area - in order to avoid the drying of algae, rotten leaves etc.

3.2. Pool cleaning

3.2.1. Principles of pool cleaning

- Sharp tools, grindstones, wire brushes, files, steel wool made of unalloyed or low-alloyed carbon steel etc. **must not be used for cleaning chrome-nickel steel**.
  Non-compliance will result in **friction marks, scratches, dull spots and the formation of extraneous rust**.

- Metallic hose couplings should be wrapped with a cloth to avoid scratch marks and extraneous rust.

- All tools, screws, bolts, pipe sections and the like **must be removed from the pool after cleaning**.
- Consequences of non-observance: **formation of extraneous rust, corrosion**.
- Metallic parts such as hair clips, coins, etc., which have remained in the pool over the winter, are in most cases corroded and have left rust stains (pool bottom, gully, bench, whirlpool bed, ...). These must be removed by pickling. The pickling paste must not dry up and must be washed off with a water jet and a cloth or soft brush to avoid staining.

When processing the chemical cleaning agents mentioned in point **3.2.5.** below, care must be taken to ensure that they do not dry up under any circumstances. This would result in unsightly stains.

Depending on the depth of the water, the pool drain must be kept closed as long as possible during the cleaning process in order to dilute the washed chemicals on the one hand and to achieve effective neutralisation on the other hand before the cleaning residues are added to the waste water.

The swimming strips in the middle of the lanes may only be cleaned with neutral, mild, non-abrasive cleaning agents. When using a high-pressure cleaner, the pressure must be kept low (max. 50 bar, water temperature max. 30°C).

The cleaning of your stainless steel pool must of course also include all ancillary areas such as the expansion pool, floor channel, overflow channel, etc.

Cleaning of floor duct and floor duct cover:

To clean the floor trunking, the floor trunking covers must be removed completely. Cleaning is carried out with commercially available stainless steel cleaners as described in 3.2.5.

Notes on cleaning the rubber seals:

- Avoid contact with strongly acidic, alkaline, oxidative and fatty cleaning agents, which are also intended for stainless steel.
- Contact with organic, non-polar solvents (turpentine, petrol, etc.) must be strictly avoided in both pure and mixed forms (emulsion cleaners).
- Most water-based neutral cleaners (surfactants, dishwashing detergents) are suitable as cleaning agents. These should only be used in diluted form.
- The rubber is temperature resistant even in hot water, so the use of warm water (up to 80 °C) with a cleaning agent described above using a sponge / plastic fleece (without roughened side) is very suitable for cleaning the seals.

When cleaning the floor trunking covers, first clean the rubber seals according to the above instructions. To clean the stainless steel surface of the floor trunking covers, the stainless steel cleaner must be applied with a brush in such a way that it does not come into contact with the rubber seal. After the stainless steel cleaner has soaked in water for an appropriate period of time, rinse it off with plenty of water and make sure that the rubber seal is rinsed off extra thoroughly.

When reinstalling the floor trunking covers, ensure that the seals are fully seated and that the sealing lips are clean.
When the floor trunking lid is pushed into the lock, the rear sealing lip tends to fold over, so the use of a lubricant and care product for rubber seals is recommended. Check the correct position of the sealing lip. The sealing lips must be directed inwards from the outer edge of the cover.

This applies analogously to the maintenance of flood valves.
The cover of the flooding valve opens automatically at a water level of 10 cm above cover level. To ensure this, the seat of the seal as well as the seal itself must be cleaned and the seal must be coated with glycerine. An unclean seal or an eccentric seat of the inserted flood valve cover could be the cause of permanent and considerable water loss over time.

Under no circumstances should pool cleaning with chemicals be carried out under intensive sunlight and thus in excessively heated pools, as the chemical processes taking place have much shorter reaction times depending on the temperature and therefore undesirable side effects (burns, staining, etc.) can occur if these are not observed.

In order to prevent dry spots on the bottom of the pool, experienced swimmers use sprinklers between cleaning and filling.
The water thus used also serves to further dilute the cleaning agents.

3.2.2. Gutter gratings

When cleaning the pool with nitric acid, the channel gratings must be removed. The gratings may only be cleaned with phosphorus-containing cleaners (max. concentration 5 %). Afterwards they must be washed off with a high-pressure cleaner (max. 50 bar, water temperature max. 30°C). Chlorine bleaching lye or hydrochloric acid are generally prohibited for cleaning.

3.2.3. Equipment parts

Equipment parts made of plastic are to be cleaned with neutral detergent (such as dishwashing detergent or similar) and scratch-free cloths.
For mechanical cleaning, we recommend the use of a high-pressure cleaner.
Stainless steel equipment parts are to be cleaned like the pools themselves.

On the following pages we give you hints and recommendations for cleaning various types of dirt:

3.2.4. Mechanical cleaning agents

Must generally be free of ferrous components.

Resources	Suitable	Unsuitable
Filler, scrapers, tools in general	Tools are only allowed to be made of stainless steel, wrenches and screwdrivers of chrome-nickel-vanadium steel.	Tools made of low or unalloyed steels which are prone to corrosion. Tools with adherent rust.
Bristle products	Brushes with natural, plastic or stainless steel bristles - only in the grinding direction, not on polished surfaces and not on unground surfaces in the visible area.	Brushes with bristles of unalloyed steel wire, brushes with grit bristles (plastic bristles containing abrasive particles).
Textiles	Textile material made of natural and man-made fibres as cleaning threads (cleaning wool) and textile fabrics (knitted and woven fabrics, cleaning cloths, scouring cloth, fringe material, fleece); cleaning textiles made of microfibres are very suitable for removing handle marks from stainless steel surfaces.	Textiles with woven or knitted metal bands.
Synthetic nonwovens	Without abrasives; mostly produced in the following colours: white, beige, yellow. For sanded surfaces in the direction of sanding or smooth sheets in the non-visible area.	For polished and unpolished surfaces in the visible area.
Synthetic nonwovens	Non-woven abrasive materials; usually produced in the following colours: green, blue, red, dark brown, black (the latter two are the most aggressive). Only for sanded surfaces in the direction of sanding in the visible area.	For polished and unpolished surfaces in the visible area.
Steel wool	Only if steel wool is made of stainless steel, but only on ground surfaces in the direction of grinding.	Normal steel wool must not be used, as abrasion causes extraneous rust to form.
Abrasive, grinding and polishing powder as an additive in cleaning agents	Slurry chalk, diatomaceous earth, magnesia, magnesium carbonate, Viennese lime, Parisian red.	Carborundum (silicon carbide), corundum, emery, quartz, feldspar, pumice stone.

Sandpaper	Conditionally suitable with a fineness above grain 240 only in the grinding direction.	With a fineness coarser than grain 240.
Water and/or steam jet	High pressure cleaners, steam jet devices.	
Miscellaneous	Natural leather (chamois leather), imitation leather, synthetic fleece, sponges, sponge cloths.	

3.2.5. Chemical cleaning agents

Must be free of halogens (chloride and fluoride ions), i.e. they must not contain hydrochloric acid, hydrofluoric acid, sodium hypochlorite or calcium hypochlorite. Such ingredients have a damaging effect on the surface and can lead to the destruction of the material structure.

Resources	Composition	Fields of application
All-purpose cleaner	Surfactants, water, often with addition of phosphates and ammonia solution.	Especially for lighter grease stains.
Neutral cleaners	Surfactants, water and fragrances; dishwashing detergent.	For surfaces soiled with grease and oil (fingerprints).
Alcohol cleaner	Surfactants, alcohol, water and fragrances.	Like all-purpose cleaner.
Alkaline cleaners	Surfactants, water and alkali; water-soluble organic solvents are often still present.	Especially for heavy grease and oil contamination (resinous oils).
Abrasive alkaline cleaners	Surfactants, water and alkali; water-soluble organic solvents are often still present. As abrasive they contain fine polishing agents (mostly slurry chalk). - May only be used on the pool walls in the grinding direction.	For all heavy grease stains and deposits of mineral substances (soot, rust, light water stains from water containing lime). To be effective, the polishing agents must be harder than the dirt. To avoid damaging the surface, they must be softer than stainless steel.
Solvent cleaner	Usually a mixture of organic solvents; they may be miscible with water (e.g. butyl diglycol, diethylene glycol ether, alcohol) or immiscible with water (petrol, turpentine).	Depending on the type, particularly good for removing grease, oil, wax, tar, adhesives, varnishes and paints.

Abrasion-free emulsion cleaners	Surfactants, water, organic solvents immiscible with water; often additional alkalis.	Especially for heavy grease stains, waxes, tar, paints. Better than non-abrasive alkaline cleaners, but worse than solvent cleaners.
Abrasive emulsion cleaners	Like scrubbing-free emulsion cleaners, but they contain polishing agents.	Like abrasive alkaline cleaners, but better cleaning effect on grease and tar.
Acidic cleaner	Acid (e.g. phosphoric acid, nitric acid, amidosulfonic acid, citric acid, acid-resistant surfactants, water, possibly fragrances). **Hydrochloric acid** and/or **cleaning agents containing hydrochloric acid** must not be used. Due to the non-porous nature of the surface of the stainless steel, a depth effect is not possible and therefore not necessary.	Removes soiling such as limescale deposits, rust deposits, grease-bound pigment dirt, light grease stains. Acidic cleaners may only be disposed of in the appropriate dilution (e.g. 1 to 3 for nitric acid/water) in agreement with the responsible authority.
Disinfectant cleaner	Quaternary ammonium compounds (= algaecides) with added water (they act as catonic surfactants, simultaneously cleaning and disinfecting) - aldehydes, surfactants and water Chlorine and/or chloride containing cleaners such as **sodium hypochlorite** must not be used. Due to the non-porous nature of the surface of the stainless steel, a depth effect is not possible and therefore not necessary.	Effect on pathogenic germs varies - depending on the disinfecting agent. When using disinfectant cleaners of any kind, the agreement of the responsible authority must be established (water authority, person authorised to fish, etc.).
Cleaning agent for high pressure cleaners	Alkaline, neutral or acidic agents (see relevant section); depending on the application, they are set to be low-foaming or high-foaming.	High-foaming products: the formation of foam prevents the detergent from running off the wall, thus prolonging its action time.

Agent for simultaneous cleaning and preservation	These products contain care components (e.g. hair waxes, plastics, silicones) and cleansing substances. The following main types are distinguished: - Solvent preservatives (contain care components and organic solvents) - Abrasion-free emulsions (contain care components, surfactants, water and organic solvents) - Abrasive emulsions (contain care components, surfactants, water, organic solvents and soft polishing agents).	Only recommended if minor soiling must be removed. Generally used for components above the water level such as diving boards and handrails. Preservation protects the stainless steel surface from rust film and other damaging foreign substances. Coloured stainless steel may form streaks that impair its appearance.
Preservative	- Solvent preservatives (contain organic solvents and care components) - Emulsion preservatives (contain care components, water and surfactants as emulsifiers).	Effect like "agent for simultaneous cleaning and preservation".

3.3. corner filling

After cleaning the pool, it is essential to fill it without direct sunlight, i.e. the filling process should be started in the late evening hours.

Before filling the pool, please check all installation parts and in particular all safety precautions for their function and perfect fastening - loose screws/nuts must be tightened!

- ✓ Headlamps - Counter-current system
- ✓ Pool cover
- ✓ Gutter grates
- ✓ Ladders - Stair rails
- ✓ Fall protection
- ✓ Separation rope holders - Signs - etc.
- ✓ Water slide
- ✓ Bottom trunking lid: make sure that the sealing lip is in the correct position, as it can fold over at one end of the lid when it is pushed in
- ✓ Check floor channel nozzles for seating, wear and completeness
- ✓ Check flood valves for centric fit and clean sealing surface
- ✓ Closing the slide valves of the pool drain

Then the filling of the pelvis can be started:

- either through floor channels integrated in the pool:
- when filling via floor channels, it is essential to ensure that a permissible filling pressure of 3 m WS is not exceeded. The covers of floor channels are designed for a maximum pressure of 5 m WS - when filled. If the maximum permissible filling pressure is now exceeded - without water loading of the filling water already in the pool - this can cause deformation of the floor duct covers and lifting of the seals. This in turn would result in uncontrolled inflow effects. An even distribution of pure water is no longer ensured. The filling pressure can be regulated accordingly by the pump pressure or mains pressure.
- with the aid of an external service, such as the fire brigade by means of a "fire hose".
- or through filling spouts.

In large pools, where it is not ensured that the pool bottom is filled with filling water and the filling is also carried out during sunlight, experienced swimming masters use sprinklers in the shallow areas to cool the bottom plate. This can prevent an uneven reduction of the thermal expansion of the bottom plates (wrinkling).

If the filling water has an extreme temporary hardness of more than 20° d.h., we recommend the use of a softening plant, but a residual hardness of 8-9° d.h. should be maintained.
This serves to slightly buffer the pH-value during the commissioning phase of the water treatment plant.

If the water treatment system (including chlorine dosing and pH neutralisation) is not put into operation after new pool filling (for example in autumn before wintering),

- you must expect the onset of algae growth within a few days (depending on water temperature and sunlight),

- we recommend to treat the water in such a way that no lime precipitation occurs in the pool. This means adjusting the acid capacity to approx. 2°dH.

3.4. Pool cleaning during operation

During the operation of the bath, the usual maintenance and cleaning work such as vacuuming the floor etc. should/must be carried out. If necessary, the pool edges, side walls and channel gratings can be cleaned with soft stick brushes - while the filter system is running - immediately before backwashing.

Stainless steel components mounted above the water level or outside the pool must be cleaned at least twice a week by flushing with drinking water to remove deposits with an increased chloride concentration - due to evaporation of the spray water - (e.g. starting base, railings, ...). In this way you prevent climate-related corrosion phenomena.

The pure and pool water quality must comply with the legal regulations and standards. The necessary and prescribed fresh water addition must also be ensured.

Foreign objects such as coins, hair clips and the like should be removed from the pool at an early stage to prevent foreign corrosion.
Any screws and nuts that come loose during operation must be retightened.

3.5. Hibernation

Basically, stainless steel pools may only be wintered when they are full!

Paddling pools and walk-through pools, i.e. pools with very shallow water depth (< approx. 50cm), must be emptied and cleaned for wintering.

Before taking the bathing water treatment system out of operation, the chloride content and the pH value of the pool water must be checked again and, if necessary, reduced to the value specified under point 2.3. by adding fresh water.

For wintering we recommend adjusting the carbonate hardness so that no lime precipitation occurs in the pool during the winter break. This means setting the acid capacity to approx. 2°dH corresponds to approx. 3.56°fH in Switzerland.
To prevent heavy lime and algae deposits on the stainless steel pool in winter, a wintering agent can be added to the pool water before wintering. This makes spring cleaning easier - especially with hard water. By adding the wintering agent, the chloride content must not be exceeded according to the specifications in point 2.3. The chemicals must be added according to point 2.4.6.

The supply lines of attractions such as gargoyles, splashing rhinoceros, water mushrooms etc. must be emptied at the end of the bathing season. Plastic attractions such as splash rhinoceros, children's slides etc. should be placed in lockable rooms after the end of the bathing season.

The shut-off device of the outlet pipe of the expansion pool must be left open to ensure that rainwater and meltwater can flow out of the surge channel.

Pipelines that may have been laid in frosty areas must be closed at the pool side (except for raw water pipes) and emptied. As a rule, this applies at least to the tapping points for sample water. Here the perforated plate cover must be unscrewed, the opening on the pool side (socket with pipe thread 1 ½") must be sealed with the plug and the pipe must be emptied. For this purpose, the water level in the pool can be temporarily lowered (25cm to 35cm) - the resulting free space up to the overflow edge serves as a buffer and will gradually be filled again by precipitation water! For attractions that are installed in areas with low water depth (e.g.: seating step with air admission, etc.) additional or deviating measures may be necessary to avoid frost damage! This can be found in the respective design documents or, in case of doubt, we will be happy to answer any questions.

Loose pool installation components such as channel gratings, separating lines, possibly ladder rails should be removed and stored. In the case of channel gratings it is advisable to mark them due to the required accuracy of fit and to stack them in the order of removal.

The pool cover must be overwintered according to the producer's instructions.

Ice skating in stainless steel pools is not advisable, since on the one hand mechanical damage in the pool head area can be the result and on the other hand a continuous stability of the ice surface is not ensured due to the thermal conductivity of the pool walls.

Ice pressure pads and other devices against ice pressure are not necessary. If, for any reason, water losses occur during the winter phase which lead to the breaking-in of the closed ice cover, handrails leading into the water can be damaged. Ensure that the supply and discharge pipes are closed tightly.

We are at your disposal for a consultation.

It is generally known that unattended swimming pools are a great danger for children. Please make sure that your entire leisure facility is always secured, closed and inaccessible to unauthorized persons and children outside of operating hours.

3.6. Temporary closure of a filled pool

If a pool is taken out of operation for a longer period of time for other reasons (switch-off of the water treatment), the same requirements apply as in point 3.5 - Winter storage or 3.1 - Pool emptying! In particular, all pools (even with a water depth of < approx. 50cm) must remain filled and the pool water must comply with the limit values for pH and free chlorine / chloride mentioned under point 2.3. With regard to possible lime precipitation, we refer to point 3.5. **The remaining water filling serves as a measure to protect the stainless steel construction from stress due to thermal expansion, protection from possible ground water, frost effects on the foundations and mechanical damage!**

For stainless steel pools in indoor swimming pools, the structural conditions usually make it possible to stand empty even for a longer period of time without any problems, since essential factors that require protective filling are eliminated in the interior.

Unattended pools pose a danger both when empty and when filled! In this connection, it is essential that you observe the obligations and regulations for safe blocking off of the shut-down pool system from unauthorised persons and the installation of the prescribed fall protection in accordance with legal requirements!

In case of any uncertainties or for clarification of special cases, please contact the manufacturer!

3.7. Special usage scenarios of the pools

If operating conditions for the operation and use of the pool deviate from these operating and maintenance instructions, these must be expressly clarified in advance with the manufacturer. A modified or improper use outside the conditions described in these operating and care instructions can lead to safety hazards, malfunction of the pool hydraulics, attractions and other installations or to serious damage to the stainless steel pool and other parts of the system!

- The following are examples, without claiming to be exhaustive, which may be applicable and in any case require closer examination:
- Modification of cover grilles at suction points or other movable installation parts in the pool
- Subsequent installation and conversion work on the stainless steel pool by third parties
- Change of parameters bathing water technology, e.g..: Operation with reduced circulation capacity / partial load operation or change in flow rate Attractions
- Lowering of the water level outside the operating hours - Night-time lowering (e.g.: for energy saving measures)
- Daily pool emptying outside of operating hours (e.g.: for energy saving measures)
- …

3.8. Equipment parts

3.8.1. Billboards

The stop boards of the swimmer pool are designed to hold timing mats to be suspended during competitions. Due to their design, there is a risk of accidents with these parts. For this reason, they are to be used exclusively during competitions or swimming training for competitions and are to be removed during normal swimming operation.

3.8.2. underwater spotlights / underwater speakers / underwater cameras

⚠ WARNING electrical voltage. Risk of injury. Disconnect from voltage! Electrical installations may only be carried out by a trained electrician!

Prior to maintenance or cleaning work, the complete lighting system must be disconnected from the power supply and the relevant safety instructions of the manufacturer must be observed.

Before replacement, the lamps and luminaires must have cooled down.

- Headlamp operation:
  Switching on the headlamps and a functional test is only permitted when the pool is full. The headlights must be installed for this purpose.

- Spotlight installation from the pool side (water side):
  Place the spotlight on the pool edge, put the pressure screw and the sealing insert matched to the cable diameter over the cable and then pull the rubber cable outwards through the gland and the cable pipe; insert the sealing insert into the cable gland and seal it with the pressure screw (you will find a slotted special bowl in our service box for tightening the cable glands). When inserting the spotlight, roll the rubber cable into the installation pot, insert the spotlight into the pot and fasten it with the screws supplied. The rolled up cable length in the installation pot must be dimensioned in such a way that the spotlight can be unscrewed under water and placed on the edge of the pool for later service work.

- Service work on the headlamp (bulb replacement):

  a) Halogen or PAR 56 lamps:

  Unscrew the spotlight under water, place it on the edge of the pool and dry it. Install replacement bulbs according to the manufacturer's instructions, paying particular attention to the correct seating of the seals! Moisture in the lamp housing considerably reduces the service life of the lamp and can lead to serious operating problems!

  b) LED headlights:

  Here, the electronics required for the lighting are usually tightly encapsulated in the housing. Replacement by the user is usually not intended. In the event of failure or reduced light output, the headlamp must be completely replaced or sent to the manufacturer to replace the defective electronic components. Further information about the headlights installed in your pool can be found in our technical documentation or on the homepage of the respective manufacturer.

- The sealing cable bushings must be checked regularly for leaks and replaced if necessary (in the course of cleaning the pool) - depending on the system installed, either the complete PG gland or only the sealing insert. In addition, the connecting cable of the spotlight (especially the part of it that is in the installation pot and thus in the water) must be checked regularly for damage and embrittlement - moisture can reach either the spotlight or, in the other direction, the power supply unit via the smallest cracks in the protective sheath of the cable and cause damage in each case! As a guideline as a result of normal wear and tear, the cable should be replaced after approx. 5 years of operation!

- Information on sealing and maintenance applies analogously to other systems installed in installation pots of the pool, such as Underwater loudspeakers or systems for pool monitoring - detailed information can be found in our technical documentation, if applicable.

- For large pools where the pool wall is accessible from the rear (technical basement), systems with operation from the outside can be installed (=underwater window with spotlight installed behind it or also a surveillance camera). Replacement lamps must be installed in accordance with the manufacturer's specifications - the tightness of the glass pane to the pool must be checked regularly!

4. PASS-THROUGH POOL

When cleaning pass-through pools, proceed as described above. Please note that stainless steel walk-through pools must be filled and operated while the bath is being opened. Emptied stainless steel walk-through pools can cause burns and injuries when exposed to sunlight.

5. WARRANTY

As already mentioned at the beginning, our warranty expires if this operating instruction is not observed.

If there are any uncertainties on your part, please contact us immediately. We are always available for further information and explanations.

If you should nevertheless suffer damage to your stainless steel pool, please let us know immediately - stating the essential facts:

- What's damaged?
- Where?
- Why - probably?
- What circumstances could have led to this?
- What consequences are to be expected/foreseeable?
- Who's in charge?
- Where and how can you be reached?

NOTES:

→ You can also find the **operating and maintenance instructions** on our homepage https://hsb.eu/de/service/#care-instructions

→ You also have the possibility to **order spare parts** on our homepage https://hsb.eu/de/service/ersatzteile/

WE WISH YOU AND YOUR GUESTS MUCH JOY AND CAREFREE BATHING PLEASURE.

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