ENGINEERING
TOMORROW

Instructions for installation and use

Stainless steel drinking water tank
(SE/SES/SEK-LK/REAK)
Storage tank water heater
(SE-R/-RG)

Drinking water storage tanks in the above-mentioned series are standing stainless steel tanks with no heating coils, which are heated by means of an external flow **domestic hot water heater.** Domestic hot water cylinders in the SE-R/SE-RG series are standing water heaters where the contents of the tank are heated by means of an internal heating coil using the heating water.

Containers, coils and all connections are made of corrosion-resistant WN 1.4571 stainless steel. The thermal insulation consists of EPS with a laminated fleece and a polystyrene or – with a volume of more than 4000 l – melamine resin foam (fleece) with a polystyrene cover (CFC-free). Special types of insulation can be provided on request.

Operational safety / proper use

Operational safety of the containers is only guaranteed if they are used as intended. This means that the above-mentioned storage tanks and water heaters may only be used to heat and store drinking water. If the drinking water quality is known to be critical, the manufacturer should be consulted before use. In particular, a chloride content of more than 120 mg/l at temperatures of ≥ 60°C is considered to be critical. The permissible temperatures and pressures specified on the rating plate (usually 10 bar / 95°C in the tank compartment) must not be exceeded. Negative pressure is not permitted. Any other type of use and/or different use is prohibited.

The containers are especially unsuitable for thermal, lake or sea water. The operator alone is the sole responsible party for all damage caused by improper use. This operating manual must be kept in the immediate vicinity of the system and must be accessible to installation, servicing, maintenance and cleaning staff at all times. The containers may only be used if they are in perfect and safe condition. All maintenance and inspection openings must be accessible at all times. Maintain appropriate installation distances.

Transport / Storage

Transport must be adapted to local conditions. Damage to thermal insulation during transport must be avoided and should be dismantled, particularly for transport over long distances. A suitable means of transport should ensure that the connections or container sheath do not become deformed. Direct contact with ferritic materials and damage to the surface must be avoided. The storage area should be dry and free of frost.

Installation / Assembly

Assembly must be carried out by a specialist company, which assumes responsibility for perfect assembly and equipment. The installation surface must be level. The storage tank must be installed in a frost-free room. The thermal insulation must be fully installed before connecting the pipes. During assembly, particular care must be taken to ensure that only stainless steel, plastic or red bronze molded parts are used. The use of copper or carbon steel is prohibited. It should also be ensured that no chips or other foreign particles enter the storage tank. During assembly, all applicable standards and regulations – in particular the Drinking Water Ordinance (*Trinkwasserverordnung*; TrinkwV) 2013, DIN 1988, DIN 4747, DIN 4751, DIN 4573, DIN EN 806, DIN EN 1717, DVGW Worksheet W 551, the VDI and the utilities regulations – and all local regulations must be observed.

Every drinking water heating system must be equipped with an approved, certified safety diaphragm valve. The nominal size of the safety valves must be selected according to the nominal volume/ storage capacity and heating capacity:

< 200 liters: DN 15 (Rp ½),
Max. heating capacity 75 kW
> 200 to 1000 liters: DN 20 (Rp ¾),
Max. heating capacity 150 kW.
> 1000 liters: DN 25 (Rp1),
Max. heating capacity 250 kW

The safety valve must be equipped with a blow-off line according to DIN 1988; this must not have more than two bends. The maximum length should not exceed 2.00 m.

A label with the following information must be attached near the blow-off line:

When heating, water may escape from the blow-off pipe for safety reasons! Do not close.

The installation of a safety temperature monitor may be required according to DIN 4747-1 (11/2003) (see Table 6) -> **check**!

For safety reasons, the temperature of the safety temperature monitor must be set to a maximum of 75°C.
In areas where the drinking water tends to precipitate hardeners, we recommend limiting the temperature of the heating medium to approx. 70°C. Pre-regulation must be carried out here. As a rule, the drinking water outlet temperature at the water temperature controller (TR) should be set to a temperature of 60°C (see Worksheet W 551 from the German Association for Gas and Water (*Deutsches Vereinigung des Gas- und Wasserfaches*)) DIN EN 806-2.

Commissioning / Operating Conditions / Decommissioning

Before initial operation, the system must be flushed and properly vented.
The installation of a filter in the cold water supply to the storage tank is recommended. After the first filling, the filter should be cleaned again.
Before heating, the functionality of all safety devices must be checked. All flange and screw connections must be checked both in cold and heated conditions and re-tightened if necessary (please follow the instructions in **Maintenance**).

Alternating operation, i.e. short-term pressure fluctuations and load changes of more than ± 20% or more than 500 times per year, is not permitted.
The system must be vented for emptying. Negative pressure can lead to damage to system components or the tank.
Operation of the system is the sole responsibility of trained and authorized staff with the necessary expertise.

Maintenance / Cleaning

Drinking water components must undergo regular maintenance and cleaning to maintain the quality of the drinking water. In particular, DIN 1988 must be observed. Other technical rules, such as the VDI Guideline 6023, DIN EN 806-5 and DIN EN 1717 contain information about this. The operator is responsible for this maintenance and cleaning and should contract a specialized company for this purpose.

The following recommendations for regular maintenance and servicing should be observed:

1. Checks / Inspections

a) monthly

- Inspection of all connections and fittings for tightness; tighten if necessary (be sure to remove hand/manhole insulation)
- Checking the required and permissible parameters (pressure/temperature)

b) additionally every six months

- Checking the safety devices (pressure/temperature)

c) additionally every year

- Checking all system components for function and operability (e.g. lever of fittings opens/closes)

2. Maintenance / Cleaning

a) monthly

- Cleaning the dirt filter or strainer / backwashing

b) annually

- Decommissioning of the entire system
- Cleaning the water heater and container; decalcification if necessary
- Cleaning the dirt filter
- Checking the meter for calibration periods

3. Torques:

- Hand-hole 160/120:
  8 M10x20 stainless steel screws,
  Material: A2-70,
  Torque: ~ 20 Nm
- Hand-hole 180/120:
  8 M10x20 stainless steel screws,
  Material: A2-70,
  Torque: ~ 20 Nm
- Hand-hole 260/180:
  10 M10x20 stainless steel screws,
  Material: A2-70,
  Torque: ~ 20 Nm
- Manhole 480/400:
  26 M14x55 stainless steel screws,
  Material: A2-70,
  Torque: ~ 50 Nm

4. Cleaning Instructions

Stainless steel containers should be treated carefully during cleaning to prevent damage to the surface. This will lead to corrosion if unsuitable materials are used. The container should therefore be rinsed with clean drinking water first (with a high-pressure cleaner if possible). A soft cloth or broom can be used for impurities that cannot be removed.
For stubborn deposits, such as lime or rust introduced by the connected network, proceed as follows:

- Sand the spots using zirconium-corundum sandpaper (e.g. ZA 80-B flap disc, manufacturer: TYROLIT) or a commercially available 1.4301 stainless steel wire brush
- For **lime deposits**, passivate after removal
- Passivate the cleaned areas again (e.g. with SAROX passivating agent, manufacturer: SCHAARSCHUH Edelstahlservice GmbH)

Passivation procedure:
- Spray the surface until it is completely wet
- Exposure time of ~ 15 minutes
- Rinse for ~ 3 minutes with clean drinking water (high-pressure cleaner)
- For large-scale lime deposits, we recommended filling the tank with ~ 5-10% citric acid. The temperature should be at least 80°C. For this purpose, all connections must first be separated and brass connections or plugs in particular must be removed. The exposure time should not exceed one hour.
- Now thoroughly rinse with clean drinking water; passivation is not necessary.

- **Rust spots** must first be stained after removal and then passivated as described above (e.g. using SAROX spray staining, manufacturer: SCHAARSCHUH Edelstahlservice GmbH)

Staining procedure:
- Spray the surface until it is completely wet
- ~ 1 hour exposure time – do not dry!
- Rinse for ~ 3 minutes with clean drinking water (high-pressure cleaner)
- After staining -> passivate as before

Each time maintenance is performed or the container is opened, the corresponding seal should be replaced (see also Spare Parts)
In addition to the procedures mentioned above, obvious defects must be remedied immediately and, if they may compromise the operational safety of the system and/or represent a danger to people, the system must be temporarily taken out of service.
Please note in particular that after a long shutdown of the system, it must be emptied to maintain the required hygiene standards and then recommissioned according to the above-mentioned guidelines. Information about this is available in DIN 1988 (Part 8.5) and VDI Guideline 6023 (Point 5.2).
According to VDI RL 6023, a hygiene plan should be drawn up for the system and all measures should be planned, defined and noted in an operation/maintenance manual (see also VDI 2895).
The operator is also responsible for this.

Stainless steel drinking water storage tank, storage tank water heater

Safety information

ATTENTION!
Wrong or faulty spare parts may cause damage, malfunctions or complete failure of the system.

WARNING! Risk of injury.
Stored residual energy, hot surface temperatures, sharp-edged components, sharp points and edges on and inside the device or on the required tools may lead to injury. Wear safety gloves.

WARNING! Risk of injury.
Danger caused by hot liquid squirting under high pressure. Wear personal protection equipment when working on the device.

WARNING! This is not drinking water!
Drinking water in parts of the system that are not used for a long time may no longer be of drinking water quality. To prevent the use of this water, drain the system parts and dispose of the water.

Disposal

If no return or disposal agreement has been made, dispose of the materials as follows once components have been properly dismantled:

- Scrap residual metal materials.
- Take plastic parts to a plastics recycling facility

Spare parts

- Flat seal, 160 x 118 x 3, made of EPDM, for hand-hole cover without groove Ø 160 mm, (SE, SES, SE-R/RG up to 1000 l capacity) **Serial number of containers starting with: P... to P 6400** Item number: 004F0762

- O-ring seal, Ø123.8 x 4.76, made of EPDM, for hand-hole cover with groove Ø 180 mm, (SE/SES up to 1000 l capacity, SE 1250/1500 (as of June 2012), SEK-LK up to 750 l (as of June 2012), SE-R, SE-RG, REAK (as of June 2012)) **Serial number of the containers beginning with: P 6402 or DP / 3026** Item number: 004U1182

- Flat seal, 180 x 120 x 2, made of EPDM, for hand-hole cover without groove Ø 180 mm, (SE, SES, LK, EBS up to 1000 l capacity = old storage series)) **All other serial numbers** Item number: 004F0763

- O-ring seal, Ø200 x 6.0, made of EPDM, for hand-hole cover with groove Ø 260 mm, (SEK-LK to 750l, REAK (until May 2012), all SEK-LK 1000l) Item number: 004F0761

- Flat seal for manhole 480 x 400 x 4 made of EPDM (SE – over 1500 l capacity, SEK-LK 1500+2000 l capacity SE 1250/1500 (until May 2012)) Item number: 004F0766

For safety reasons, please be sure to check the size of the hand-hole/manhole before ordering to avoid any misunderstanding, especially with older containers.

Special models

Special models can be manufactured if requested by the customer. As a rule, this concerns the external dimensions of the devices and/or the dimensions of connections with, for example, limited room heights, etc.

Thermal insulation in other designs can also be supplied if requested by the customer (e.g. different insulation thicknesses). These instructions also apply to these devices. Please note the information on the type plate!

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