reflex
Thinking solutions.

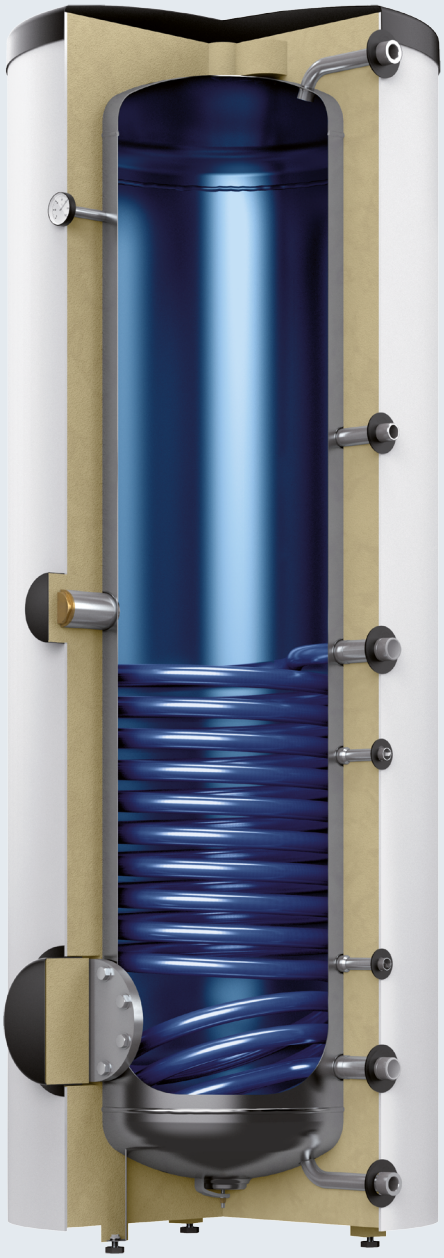
Storatherm

Aqua Inox

Stainless steel tank 150 – 500 litre

GB Operating manual

Original operating manual



1 Information concerning the operating manual

This operating manual is an important aid for ensuring the safe and reliable functioning of the tank. Reflex Winkelmann GmbH accepts no liability for any damage resulting from failure to observe the information in this operating manual. In addition national statutory regulations and provisions in the country of installation must also be complied with (concerning accident prevention, environment protection, safe and professional work practices, etc.).

2 Safety

2.1 Personnel requirements

The assembly of, connection of and structural alteration work to the tank must be carried out by an authorised specialist company in accordance with all applicable national and local regulations.

2.2 Intended use

This storage tank is to be used solely for the heating of drinking water.

Any other use is regarded as improper use, and no liability will be accepted for any resulting damage. The tank complies with the "Pressure Equipment Directive" 2014/68/EC in respect of the technical requirements according to Article 4, Para 3. Only fluids of fluid group 2 are permitted.

The glycol fraction in the water must be between 25 % and 50 %.
The manufacturer’s information in respect of the dosing quantity must be observed when dosing additives, especially concerning corrosion.

2.3 Impermissible operating conditions

The tank is not suitable for the following conditions:

- Mobile system operation
- Outdoor operation
- Usage with mineral oils
- Usage with flammable media
- Usage with distilled water or water with a conductivity < 120 µS/cm
- For use with water with a chloride content of > 250 ppm

2.4 Personal protective equipment

Use the prescribed personal protective equipment as required (e.g. ear protection, eye protection, safety shoes, helmet, protective clothing, protective gloves) when working on the system in which the tank is installed. Information on personal protective equipment requirements is set out in the relevant national regulations of the respective country of operation.

3 Description

The indirectly heated hot water tank, referred to below as a tank, is used for drinking water. It primarily comprises a stainless steel storage tank. The outside wall of the storage tank is provided with permanently attached insulation to prevent heat loss.

3.1 Identification

The nameplate provides information on manufacturer, year of manufacture, part number and technical data. The nameplate is attached to the tank.

3.2 Regulations

Concerning the installation and operation of the device, the following standards, regulations and directives have to be complied with:

- DIN EN 806
- DIN EN 1717: 2011-08
- DIN 1988
- DIN 4708
- EN 12975
- pr EN 12897: 2014
- DVGW
  - Worksheet W 551
  - Worksheet W 553
- EnEG (German energy saving act)
- EnEV (German ordinance on energy-saving thermal protection and energy-saving plant technology for buildings)
- 2009/125/EC (Ecodesign Directive)
- Ordinance (EU) No. 814/2013 (implementing measures)
- Local regulations
- VDE regulations

4 Technical data

Note!

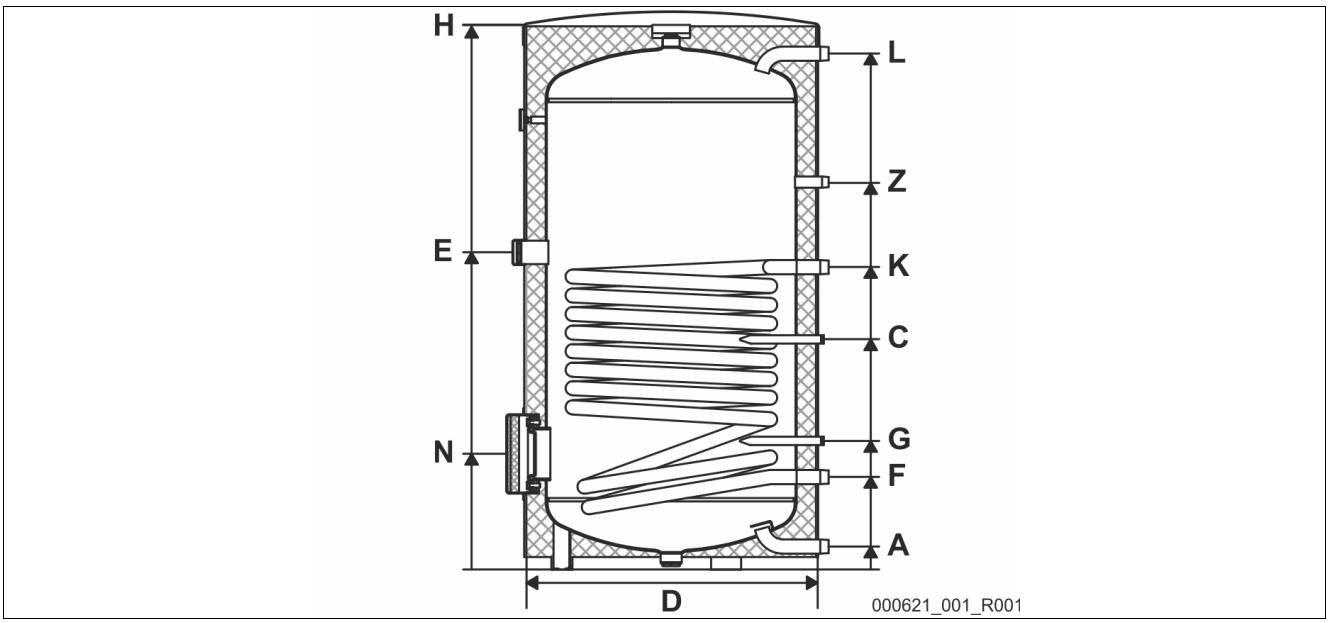
The following values apply for all drinking water tanks:

• Permissible gauge operating pressure:	
– Hot water	10 bar
– Drinking water	10 bar
• Permissible operating temperature:	
– Hot water	130°C
– Drinking water	90°C
• Energy efficiency according to the ErP directive	A (150 litre); B (200 - 500 litre)
• Material class DIN 4102-1	B2

- Heat exchanger permissible operating pressure: 10 bar

Al 150/1M - Al 500/1M

- DHW cylinder with one smoothbore heat exchanger
- Additional sleeve for electric heating
- Insulation(1): rECOflex insulation system with foil jacket



H	Height
E	Sleeve for screw-in immersion heater
N	Blind flange
L	Hot water
Z	Circulation
K	Heat supply

C	Heating
G	Solar
F	Heat return
A	Cold water
D	Diameter
-	---

Type	Contents (l)		Ø D (mm)	Height H (mm)
	Total	Potable water		
AI 150/1M	150	152,4	600	1171
AI 200/1M	190	190,4	600	1434
AI 300/1M	295	293,6	700	1793
AI 400/1M	375	378,2	750	1590
AI 500/1M	475	477,0	750	1960

Type	Width (mm)	Heating surface (m^2)	Heat-holding losses (W)	Continuous output bottom (l/h)
AI 150/1M	600	0,8	38	804
AI 200/1M	600	1,1	44	1207
AI 300/1M	650	1,4	57	1453
AI 400/1M	650	1,6	61	1504
AI 500/1M	650	1,8	72	1710

Type	Tilted height (mm)	Weight net (kg)	Circulation Z	
			R	(mm)
AI 150/1M	1285	35	¾"	759
AI 200/1M	1529	43	¾"	759
AI 300/1M	1885	58	¾"	1180
AI 400/1M	1725	68	¾"	1112
AI 500/1M	2070	81	¾"	1264

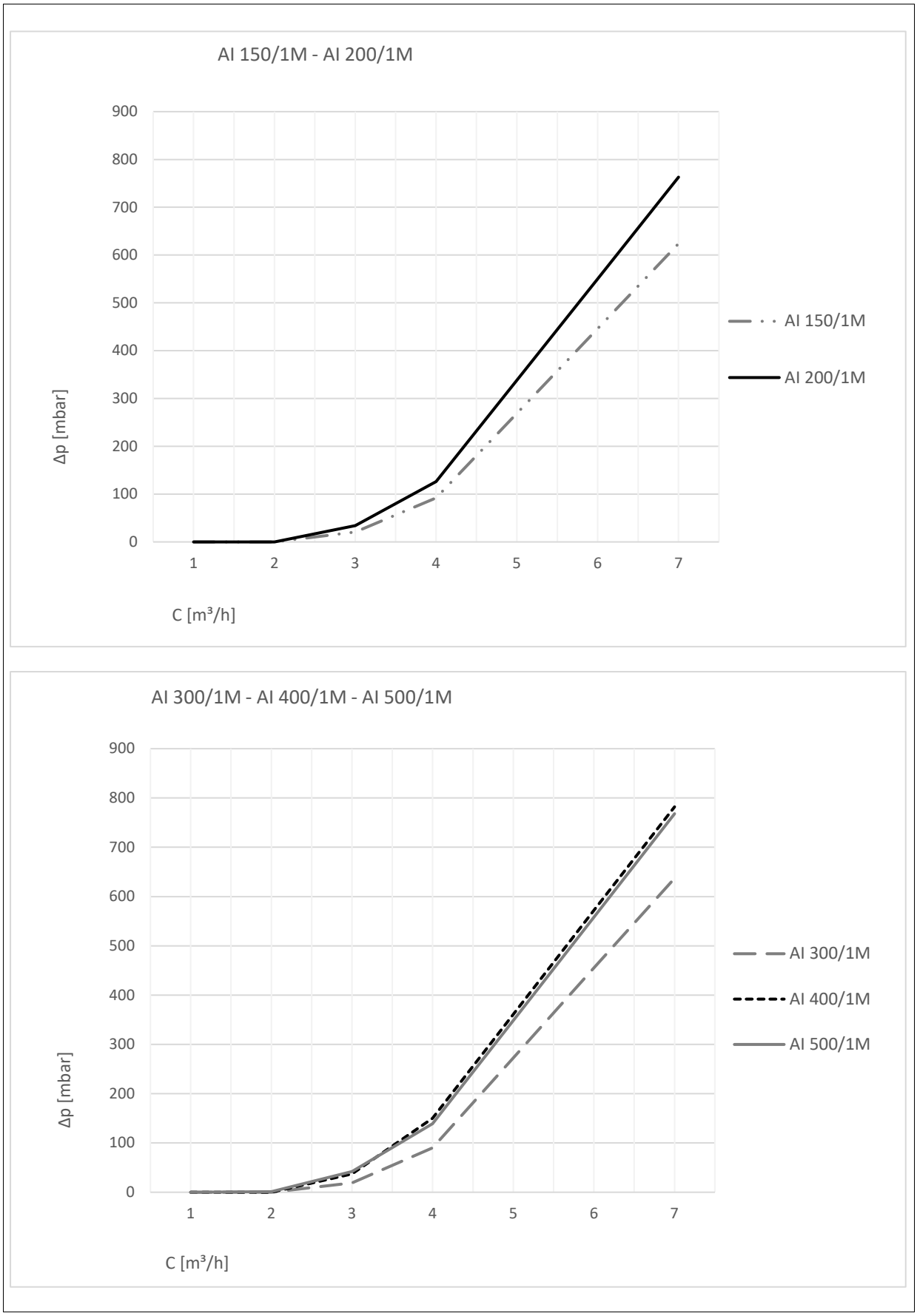
Type	Hot water L		Cold water A	
	R	(mm)	R	(mm)
AI 150/1M	¾"	1112	¾"	55
AI 200/1M	¾"	1371	¾"	55
AI 300/1M	1"	1731	1"	89
AI 400/1M	1"	1526	1"	55
AI 500/1M	1"	1887	1"	55

Type	E-sleeve for screw-in immersion heater		
	R	h (mm)	Installation depth (mm)
AI 150/1M	1½"	624	450
AI 200/1M	1½"	719	450
AI 300/1M	1½"	925	500
AI 400/1M	1½"	968	600
AI 500/1M	1½"	968	600

Type	Sensor pipe		Blind flange N		
	Heating C (mm)	Solar G (mm)	h (mm)	DN (mm)	Depth (mm)
AI 150/1M	474	311	259	110	365
AI 200/1M	549	331	259	110	365
AI 300/1M	713	408	325	110	365
AI 400/1M	745	419	315	110	462
AI 500/1M	745	419	315	110	462

Type	Heating flow K		Heating return F	
	R	(mm)	R	(mm)
AI 150/1M	1"	564	1"	221
AI 200/1M	1"	659	1"	221
AI 300/1M	1"	865	1"	256
AI 400/1M	1"	908	1"	256
AI 500/1M	1"	908	1"	256

Connection diagram - pressure losses



Δp [mbar] = Pressure loss due to the heating water heater

C [m³/h] = Heating water flow rate

5 Installation

⚠ WARNING

Risk of injury due to heavy weight

The tanks are heavy. Consequently, there is a risk of physical injury and accidents.

– Use suitable lifting equipment for transportation and installation.

⚠ CAUTION

Risk of burns

Escaping hot medium can cause burns.

- Maintain a sufficient distance from the escaping medium.
- Wear suitable personal protective equipment (safety gloves and goggles).

5.1 Transport

ATTENTION

Property damage during transport

Improper transporting procedures may cause damage.

- Fasten the device with suitable transport securing means such as straps.

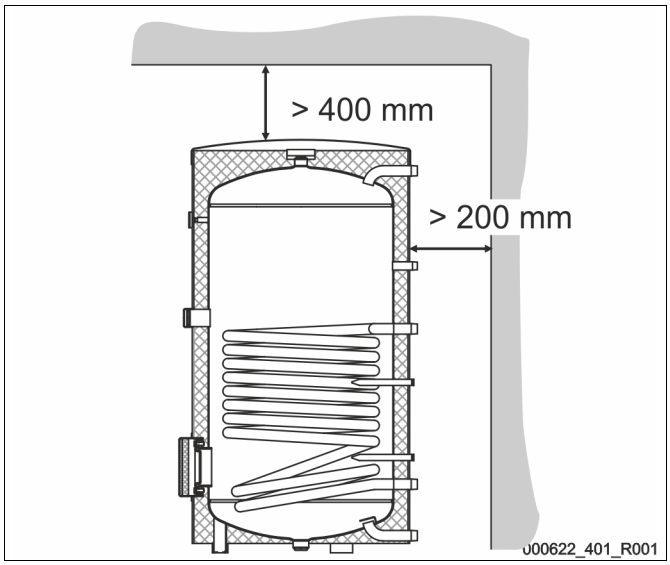
For transport to the installation location proceed as follows:

1. Observe the marking on the packaging.
2. Only transport the tank in an upright position.
3. Move the tank carefully during transport to the installation location.
4. Set the tank down gently.
5. Only remove the packaging at the place of installation

5.2 Installation location

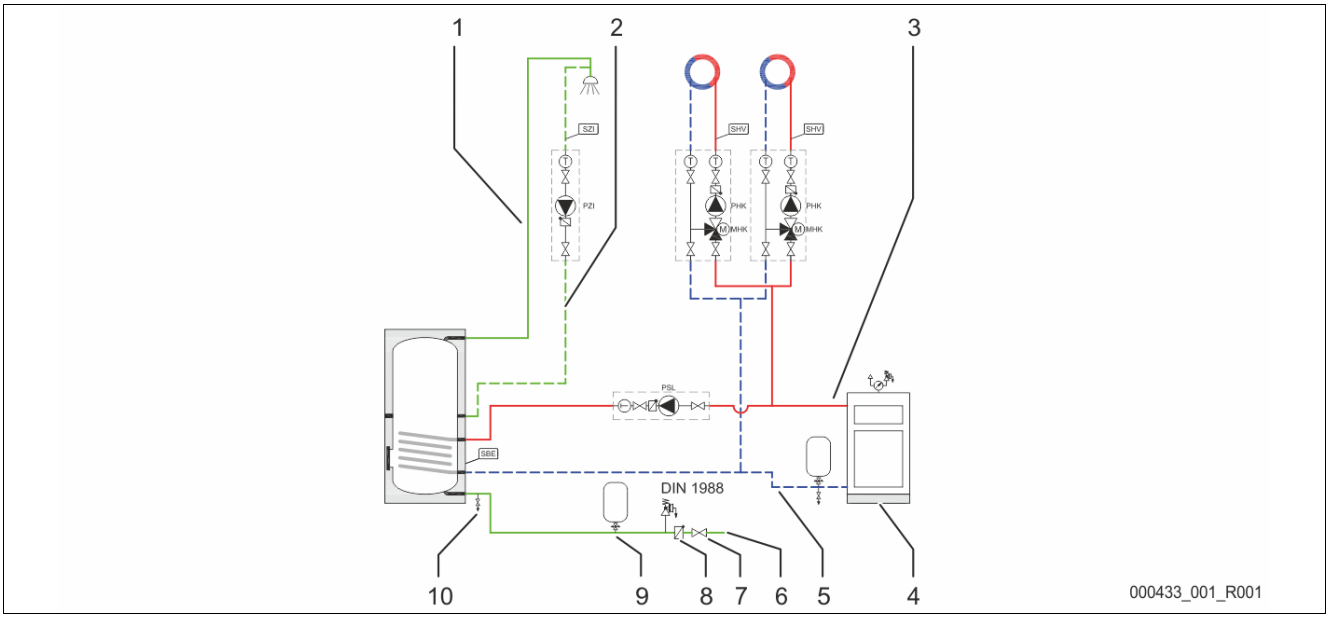
Ensure the following conditions are fulfilled for the installation location:

- Frost safe room.
  – In damp rooms, use a platform.
- Load bearing, level floor.
- Collection tray with connected drain.
- Allow for the minimum distances to the side and above.
- Take the position of the connections from the technical data, see chapter 4 "Technical data" on page 5 .



5.3 Tank assembly

Make the connection to the tank at the cold water pipe in accordance with DIN 1988.



1	Hot water (WW)
2	Circulation (ZK)
3	Heat flow (HV)
4	Boiler (HK)
5	Heat return (HR)

6	Cold water (KW)
7	Isolation valve
8	Return flow prohibiter (pipe separator)
9	Diaphragm expansion tank
10	Drain

▶ **Note!**

Prevent natural circulation of the water.

- Use non-return valves or check valves with backflow preventers in the tank circuits.

When connecting the tank, observe the following points:

- Observe the flow rule: “For water installations with two or more metals, then the base metals must come before the noble metals in the direction of flow.”
- Stainless steel tanks must not be connected directly to galvanized or copper pipes. In this case, an intermediate insulating fitting must be used. Red bronze, brass, plastic and stainless steel can be directly connected.
- The tank must not be directly screwed to the ground because of possible transverse forces.

▶ **Note!**

If a connection is not being used, it must be tightly closed and insulated.

5.3.1 Drinking water pipe connection

⚠ WARNING

Health hazard due to lack of hygiene

Drinking water can be contaminated if installation work is not carried out cleanly

- Fit the tank cleanly in accordance with best practice.

ATTENTION

Equipment damage due to incorrect installation of the safety valve.

If the safety valve is incorrectly fitted, the device can be damaged due to exceeding of the permissible operating pressure.

- Install only a type-approved safety valve.
- Use a safety valve with a safety rating of no more than 10 bar.
- Install the drain pipe of the safety valve so that its end is positioned above a drainage point in a frost-proof area, and is clearly visible.
- The drain pipe must have at least the same cross-section as that of the safety valve outlet.

When connecting the drinking water pipe to the tank, observe the following points:

- Use suitable individual fittings or a complete safety assembly, see chapter 5.3 "Tank assembly" on page 10 .
- Use a safety valve with a safety rating of no more than 10 bar.
- Fit the safety valve above a drainage cock.

5.3.2 Hot water connection

When connecting the heater coil, observe the following points:

- Connect the heater coil in counterflow mode, see chapter 5.3 "Tank assembly" on page 10 .
  - Do not confuse flow and return connections.
- Make the flow and return pipes as short as possible and fully insulate.
- Provide a drainage cock in each of the flow and return lines.

5.3.3 Temperature control equipment connection

Install the temperature sensor in the appropriate sensor sleeve.

- see chapter 4 "Technical data" on page 5
- Top sensor: for heating operation
- Bottom sensor: for solar operation

6 Commissioning

The responsible installer must explain to the operator how the tank functions and how it is to be used. He/She must draw attention to maintenance work that has to be carried out at regular intervals. The service life and correct functioning of the tank are dependent on this. The tank must be emptied if there is a risk of frost, or prior to its being removed from service.

6.1 Filling the tank

Proceed as follows when filling the tank:

1. Prior to first filling, rinse the tank and pipes with water.
   - Dispose of the water into the collection tray, see chapter 5.2 "Installation location" on page 9 .
2. Fill the tank with water until bubble-free water escapes from the open hot water drawing point.
3. Check the connecting fittings for leaks.
   - If necessary, tighten the connecting fittings.

▶ **Note!**

During the heating phase, water escapes at the safety valve due to expansion of the water.

- Do not close the safety valve.

7 Removal from service

Remove the tank from service when requested to do so in the heating appliance operating manual,see chapter 8.1 "Draining" on page 12 .

▶ **Note!**

Empty the tank when removing from service.

- If there is a risk of frost.
- During maintenance.

8 Maintenance

⚠ CAUTION

Risk of burns

Escaping hot medium can cause burns.

- Maintain a sufficient distance from the escaping medium.
- Wear suitable personal protective equipment (safety gloves and goggles).

8.1 Draining

Prior to maintenance, repair or removal from service, disconnect the tank from the drinking water pipe and drain. If necessary, drain the heating register too.

Proceed as follows:

1. Close the shut-off valves.
   – Drinking water pipe.
   – If necessary, from the heater coil.
2. Fully empty the tank via the drainage cock.

8.2 Cleaning

The heat capacity of the tank will be reduced if the heater coil becomes scaled up. The amount of energy required and the heating times are increased. A silty tank reduces the quality of the drinking water. The tank should be de-scaled at regular intervals and cleaned to remove silt/sludge deposits. The levels of scale formation and silt deposits in a tank depend on the usage duration, the operating temperature and the water hardness.

Proceed as follows:

1. Empty the tank, see chapter 8.1 "Draining" on page 12 .
2. Open the blind flange.
3. Clean the tank.
   – Remove the sludge with water and a cloth.
4. Descale the heater coil.
5. If necessary replace the blind flange seal.

▶ **Note!**

The quality of the heating water is subject to VDI 2035.

8.3 Recommissioning

Rinse the tank thoroughly with water after cleaning or after maintenance. Vent the individual water circuits.

8.4 Troubleshooting

▶ **Note!**

Unusual noises arise due to expansion of the tank during the heating phase and are harmless.

▶ **Note!**

There is no danger to health arising from the adverse odours and the dark colour of the heated drinking water.

9 Disposal/recycling

The intentional or unintentional reuse of used components can result in a hazard for persons, the environment and the system.

Therefore, please observe the following points:

- The operating company is responsible for proper disposal.
- Only to be disposed of by specialist personnel.
- Drain operating liquids and consumables into suitable collection containers and dispose of correctly.
- Upon conclusion of the useful life, strip the system down into different separable materials and deliver to a specialist company for recycling.

▶ **Note!**

The DHW cylinder, the packing and the insulation materials are largely made from recyclable raw materials and are free from CFCs and HBCDs.

10 Appendix

10.1 Reflex Customer Service

Central customer service

Switchboard: Telephone number: +49 (0)2382 7069 - 0
Customer Service extension: +49 (0)2382 7069 - 9505
Fax: +49 (0)2382 7069 - 9588
E-mail: service@reflex.de

Technical hotline

For questions about our products
Telephone number: +49 (0)2382 7069-9546
Monday to Friday, 8:00 a.m. – 4:30 p.m.

10.2 Warranty

The respective statutory warranty regulations apply.

10.3 Conformity and standards

<table>
<tr><td colspan="3">EU Declaration of Conformity</td></tr>
<tr><td colspan="3">We declare that the stainless steel tanks Reflex Storatherm Aqua Inox Al 150/1M, Al 200/1M, Al 300/1M, Al 400/1M and Al 500/1M fulfil the conditions of the following relevant harmonisation legislation of the community:
• Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonisation of the laws of the Member States relating to the placing of pressure equipment on the market</td></tr>
<tr><td colspan="3">The following standards and technical specifications relating to the hot water storage tank have been applied:
• EN ISO 15613 Specification and qualification of welding procedure for metallic materials - Qualification based on pre-production welding test
• EN ISO 15614-1 Specification and qualification of welding procedures for metallic materials- Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys
• EN ISO 9606-1 Qualification testing of welders - Fusion welding - Part 1: Steels
• EN 10204 Metallic products-types of inspection documents
• EN ISO 9001:2008 Quality management system-requirements
• EN 12897 Water supply. Specification for indirectly heated unvented (closed) storage water heaters</td></tr>
<tr><td colspan="3">The product described is intended solely for heating drinking water.</td></tr>
<tr><td colspan="3">The signatories are authorised to collate the technical documentation and undertakes to provide this documentation in a suitable format, if required by the competent authority.</td></tr>
<tr><td rowspan="4">Manufacturer
Reflex Winkelmann GmbH
Gersteinstraße 19
D - 59227 Ahlen - Germany
Telephone: +49 (0)2382 7069 - 0
Fax: +49 (0)2382 7069 - 9588
E-mail: info@reflex.de</td><td colspan="2">This declaration is made by:</td></tr>
<tr><td></td><td></td></tr>
<tr><td>Norbert Hülsmann</td><td>Volker Mauel</td></tr>
<tr><td colspan="2">Members of the Board of Directors</td></tr>
</table>

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