User Guide

Standard storage

BRUNNER®
made in germany.

Contents

1 About this document

Please read these instructions before assembly, commissioning and operation.

1.1 Purpose of this manual

This document contains information about Standard storage. Among others, you will find here information about:

- Safety and risks;
- Product description and principles of operation;
- Assembly, installation and commissioning;
- Operation;
- Cleaning and maintenance;
- Decommissioning and disposal;
- Technical and commercial data.

1.2 Target audience

This document contains also information for the operator of the heating system.

1.3 Validity of these instructions

This document is valid for the Standard storage starting from 03/2014.

Ulrich Brunner GmbH reserves the right to introduce technical changes, as far as they serve for technical progress, or if they are required by technical safety provisions.

1.4 Keeping of documents

IMPORTANT

READ CAREFULLY BEFORE USE

KEEP FOR FUTURE REFERENCE

Keeping of documents related to the Standard storage as well as all other supplementary documents is is one of the operator's obligations.

1.5 Text style rules

Handling or operating instructions with several steps

Descriptions of operations or actions with several steps, when these steps must be performed in chronological sequence.

1. First step;
2. Second step;
3. Third step.

→ Final result.

1.6 Symbols and text style rules

Each **Danger** is a potential source of injuries or health damages.

Each **Risk** is a combination of probability and severity of an injury or health damage, which can occur in a dangerous situation.

Every **Dangerous area** is the area and surroundings in which the water boiler/heater with/without the heating system is located, where the safety or health of a person could be in danger.

Each **vulnerable person** is a person which is totally or partially present in a dangerous area.

The **operating personnel** consists of persons which are responsible for installation, operation, setup, maintenance, cleaning, repairs or transport of the system. In this documentation, a distinction is made between:

Operating personnel as the **Operator of the system**, i.e. the end user, which has received instructions from the Contractor and does not necessarily have additional qualifications.

Operating personnel as the **Contractor** are the qualified professionals, which are entitled to perform the indicated specialist works.
In this document, the following symbols are used:

DANGER

A danger of high risk persists, which leads to death or severe injury, if this endangering situation is not avoided.

Each **Risk** is a combination of probability and severity of an injury or health damage, which can occur in a dangerous situation.

WARNING

A potential danger of medium risk persists, which can lead to death or severe injury, if this endangering situation is not avoided.

CAUTION

A danger of low risk persists, which can lead to minor or moderate injury, if this endangering situation is not avoided.

NOTE

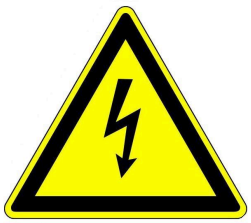
Additional helpful information

2 Safety

2.1 Dangers and safety precautions

Assembly, installation and maintenance works may be performed only by a qualified contractor.

- Only such activities should be performed, which are described in this manual.



Electrical shock

Electrical installation works may be performed only by a qualified contractor.

- Electrical connections are under mains voltage. This can lead to electric shock.
- Please observe all valid regulations.

Risk of injury caused by hot water

High water temperatures can lead to scalding. Small kids or elderly people can be in danger even at lower temperatures.

Avoiding equipment damages and the resulting risks

Sprays, solvents or chlorine-based cleaning agents, paints, adhesives etc. can lead to equipment damage under some circumstances.

Never try to modify for any reason any part or equipment of the Standard storage , if these modifications could impair the operational safety.

Freezing risk

When the Standard storage is out of operation for a longer period (e.g. during holidays) in a room without heating, this can lead to freezing of water in pipelines. Freezing water can damage the pipelines and cause consequential damages.

- The Standard storage should be installed in rooms with ambient temperatures from 0 °C to 40 °C.

Supervision of kids or untrained persons

The Standard storage should not be operated by persons (including children) with limited physical, sensory or mental capabilities, or if they lack the necessary experience and/or knowledge, unless they are supervised by a person responsible for their safety, or if they received instructions from such person on how to operate this equipment.

Children should be supervised to ensure that they cannot use the Standard storage for playing.

2.2 Warnings

Warnings in this document are emphasized by pictograms and signal words.

The pictogram and the signal word indicate the type, the source and causes of a certain action. The necessary precautions or instructions to be followed are indicated.

The same applies to results or desired effect of an action.

These warnings refer to possible misuse of this equipment, which seems likely based on our experience.

Certain residual risks are also indicated. The residual risks are inevitable:

- despite the safety measures considered in product design,

- despite the safety precautions,

- despite the complementary protective measures.

For certain points we have provided recommendations and instructions on how to use protective measures, including personal protective equipment. Special safety instructions and recommendations are applied for transport, handling and storage. Instructions for safe setup and maintenance include separate protective measures too.

Structure of warnings

The warnings that precede each assembly step, are shown as follows:

Danger

Type, source and causes of danger

Measures

Call for action

→ Result or safe use

2.3 Regulations

During assembly, commissioning and maintenance of the Standard storage, the following regulations and guidelines must be observed:

Legal requirements:

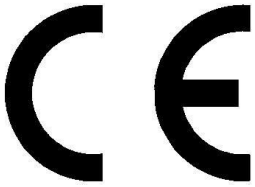
- Legal regulations for accident prevention
- Legal regulations for environment protection
- The provisions of the professional associations
- The “Energy Saving in Buildings” law (Energieeinsparungsgesetz-EnEG)
- The Energy Saving Regulation (Energieeinsparverordnung-EnEV)
- The national building code and the list of technical construction regulations
- The governmental, regional building codes and boiler room equipment listings.

Standards and Guidelines:

- The relevant safety conditions included in DIN, EN, DVGW, TRI and VDE standards
- EN 12828 Heating systems in buildings - Hot-water heating systems (2002)
- EN 12831 Heating systems in buildings. Method for calculation of the design heat load
- EN 14597 Temperature control devices and temperature limiters for heat generating systems

- DIN 4753 Water heating systems for drinking and process water
- DIN 1988 Technical rules for drinking water installations (TRWI)
- DIN EN ISO 4126 or TRD 721 - Safety devices for protection against excessive pressure - Safety valves
- DIN VDE 0100 Part 701 2008-10 DIN VDE 0100-710 Low voltage installations
- DVGW worksheets W551 and W552 Technical measures to reduce the growth of legionella
- VDI 2035 Prevention of damage in hot-water heating systems (scale formation, corrosion) (2009)
- VDI 4708 - Heating equipment (pressure maintenance, venting, degassing) (2012).

2.4 Conformity



We declare as manufacturer, that the product -Standard storage- meets the basic guidelines for placing on the market in the EU.

3 Product description

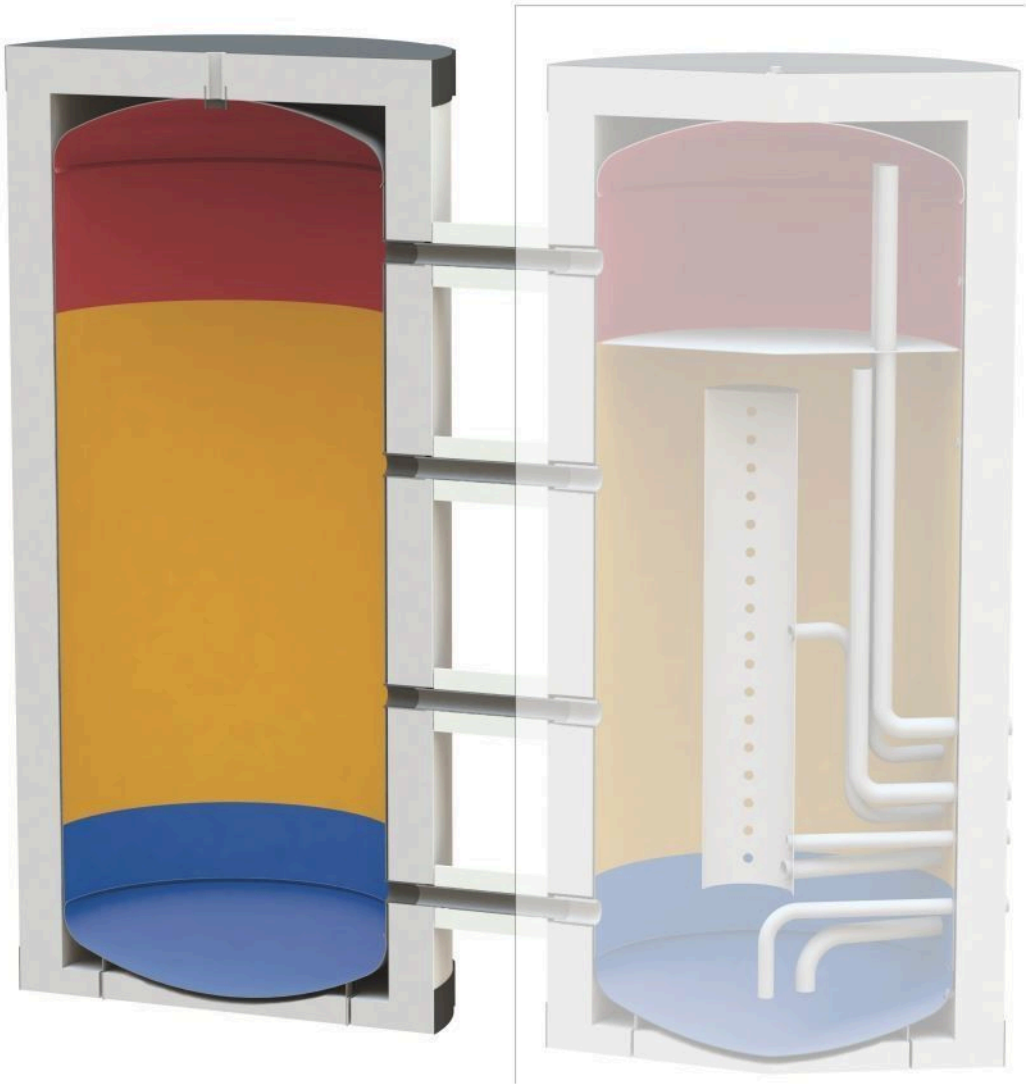
3.1 Intended use

The Standard storage is designed and built according to generally accepted engineering standards.

The standard storage tank is optimized for use with renewable heat sources as a buffer tank. It is designed to expand the volume of the main storage tank within the same system.

In practice, the parallel loading and unloading has proven itself. The standard storage tank must be identical in size to the main storage tank.

The standard storage tank is connected to the main storage tank. This is done at the four water connections, which are aligned vertically on the right and left side of the tank. All these connections have a diameter of 1 1/2“ and are arranged adequately for main storage tank connection.



The purpose of the standard storage tank is the collection, storage and delivery (on demand) of all energy streams.

CAUTION

Always seek advice from an expert craftsman; remember that all works should be carried out by authorized companies. All warranty claims are void, if the above requirements are not held.

Improper or incorrect use can be dangerous to life and limb of the operator or third parties.

Connecting of incompatible storage tanks or other equipment may result in deviations of the intended application and all their unintended and undesirable consequences.

The improper or incorrect use can also lead to equipment damage and other property damage.

3.2 Product overview

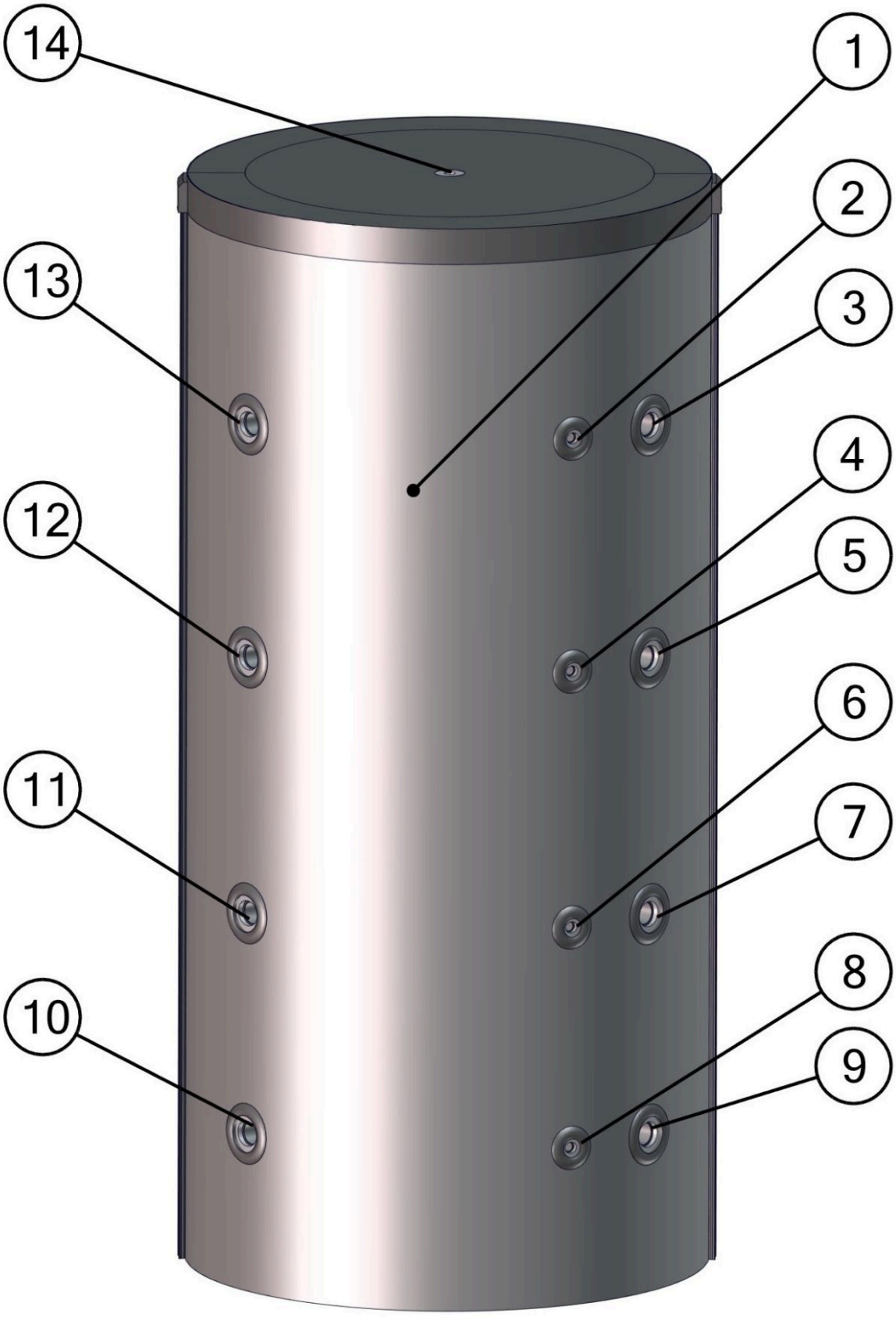


Illustration 1: Standard storage tank

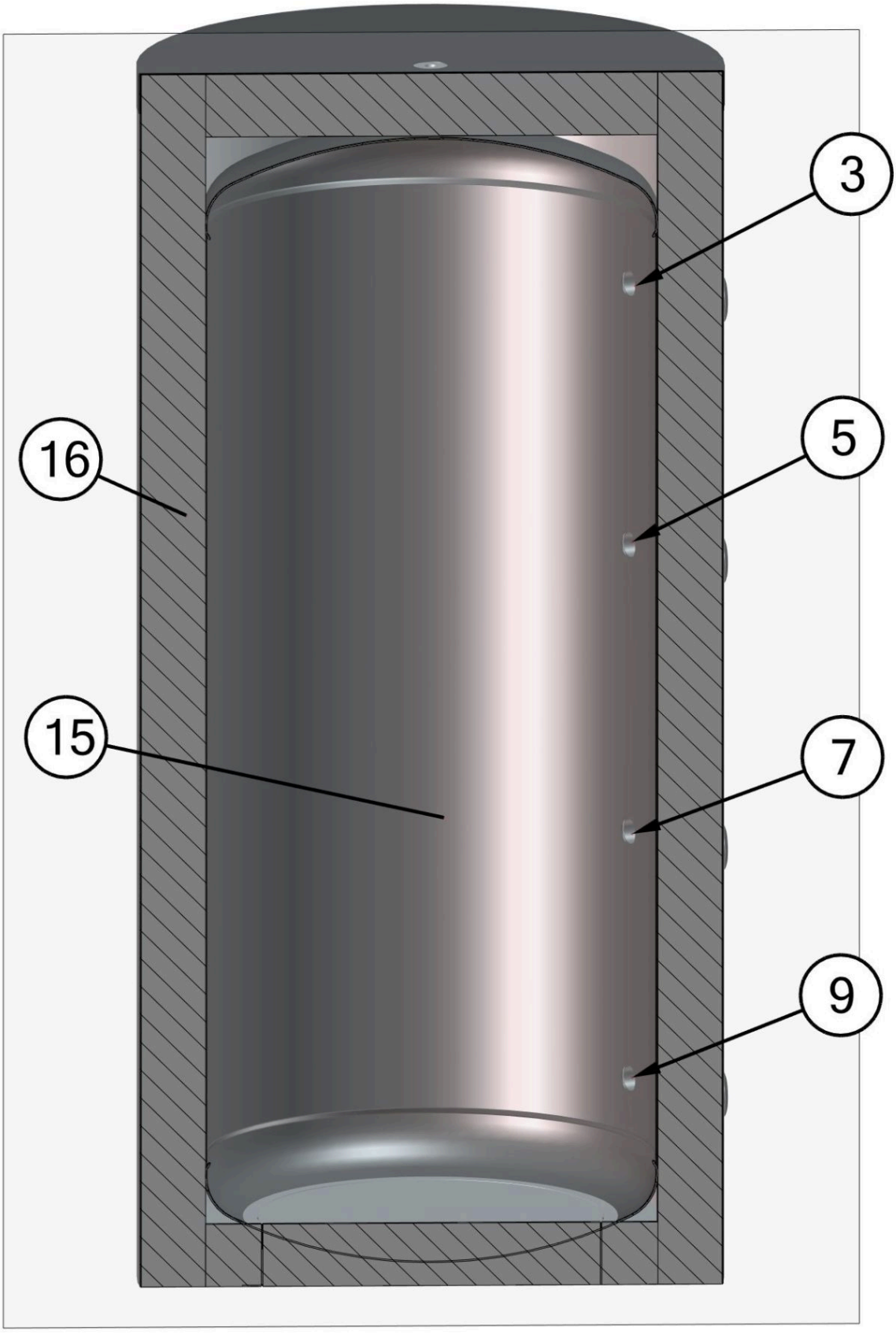


Illustration 2: Section of a standard storage tank

1	Standard storage tank	9	Water connection to the main system storage

2	Temperature sensor connection	10	Water connection to the main system storage
3	Water connection to the main system storage	11	Water connection to the main system storage
4	Temperature sensor connection	12	Water connection to the main system storage
5	Water connection to the main system storage	13	Water connection to the main system storage
6	Temperature sensor connection	14	Connection for breather
7	Water connection to the main system storage	15	Storage tank body without insulation
8	Temperature sensor connection	16	Insulation

The polyester fibre insulation and the external polystyrene shell ensure lowest heat losses. The hard top shell which is used as top cover acts as thermal insulation for the upper part of the tank. The bottom insulation is intended to minimize the cooling losses in the lower tank area.

The insulated blind caps are used as covers for those hydraulic connections, which are not in use.

4 Assembly

Please observe the legally recognized national regulations and standards, and the connection conditions of the local electricity and water companies.

Please read and follow the available documentation for assembly, operation and maintenance of the Standard storages.

DANGER

Possible personal injury and/or property damage caused by improper installation

Assembly and installation of the Standard storage requires comprehensive technical knowledge.

- Assembly and installation works must be performed by authorized professionals.

4.1 Requirements for location

Location

The location should be checked according to the following criteria:

- The Standard storage should be located only inside enclosed spaces;
- The installation room must be dry and protected against freezing;
- The base for the Standard storage must be level, flat and able to bear the weight of the filled Standard storage.
- The location must be chosen to keep the maximum ambient temperature under 60 ºC.
- Please note the possible building humidity.
- Remember that the residual humidity of the building can be harmful for electronic components. For the longer lifetime of electronic parts, please pay attention to a dry and clean installation of such equipment.
- When the Standard storage is located in unusual places (such as attic, living spaces with water-sensitive flooring, storage rooms etc.) it is necessary to provide a suitable water drainage. This water drainage with a sufficiently dimensioned drain channel must be ready to remove the spilled water to avoid any secondary damage.

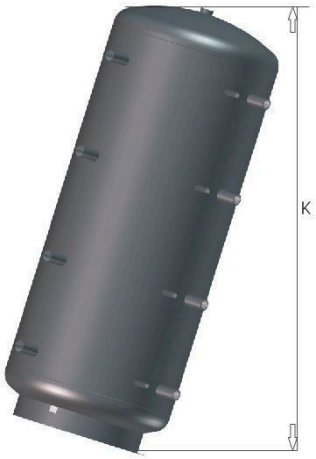
Minimal clearances to walls and ceiling

- Please keep access for maintenance works and servicing. Remember to leave around the tank at least 200 mm for eventual maintenance works. It is recommended, that the equipment connection blocks, water connections, electrical junction boxes or heating installations are fully accessible, and that there is no place for heat accumulation.
- Power supply cables and sensor leads must be always laid separately.

Access for erection and assembly:

- Please check and examine the place for location according to the criteria of operating conditions, and the necessary dimensions for handling and future access.

- Please check the accessibility with regard to handling dimensions and the diameters without insulation (see technical data).
- Before erection of the buffer tank please check the relevant tilted dimensions without insulation (K).
- Please keep access for maintenance works and servicing. Remember to leave around the tank at least 200 mm for eventual maintenance works.
- Power supply cables and sensor leads must be always laid separately.



CAUTION

The stated height of the Standard storage with insulation is the actual height excluding the breather. Please observe the breather dimensions when planning the installation works.

4.2 Dimension drawings for different installation options

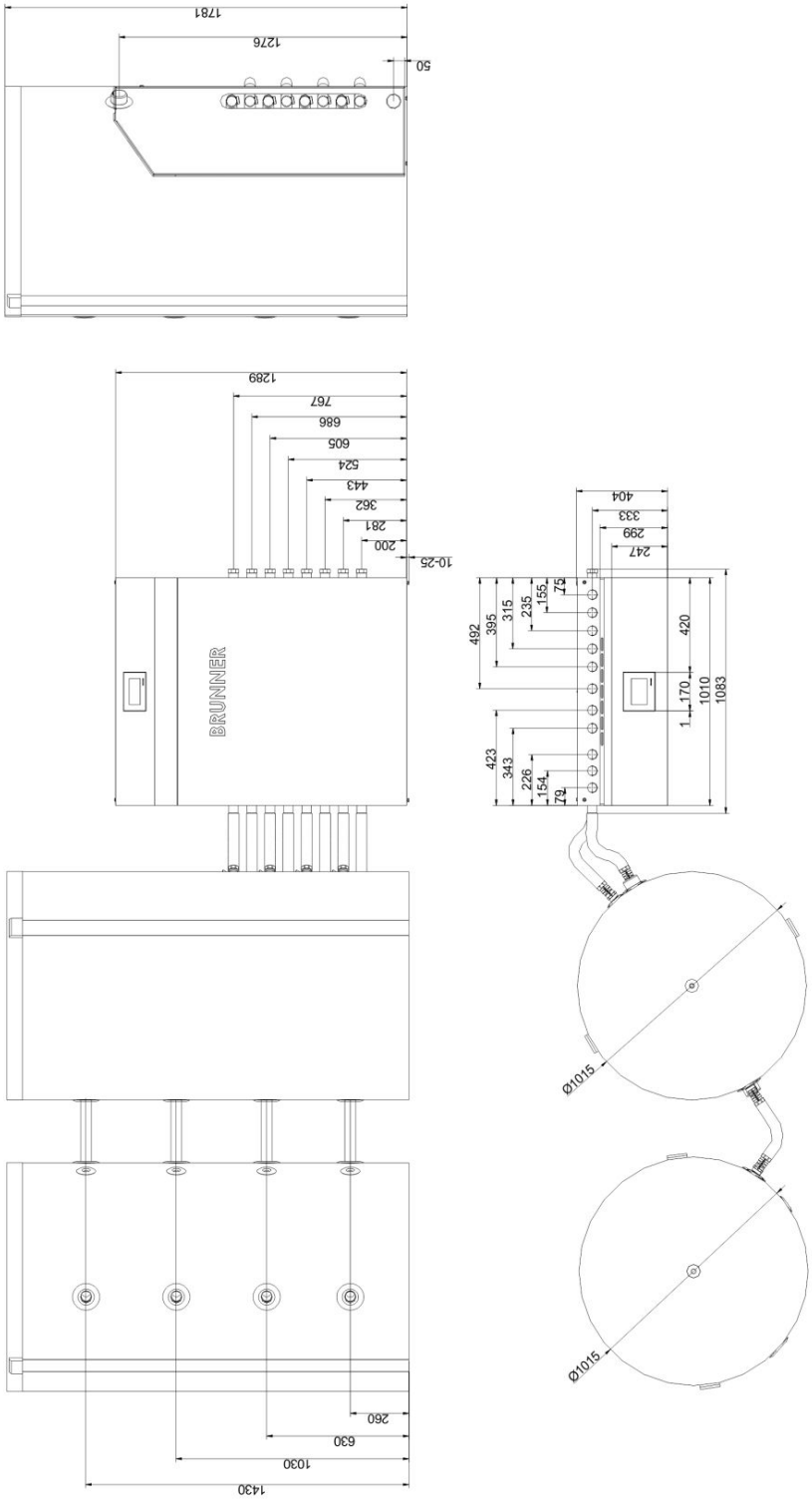


Illustration 3: BRUNNER Heating Center with main storage tank and standard storage tank, each 750 Liter

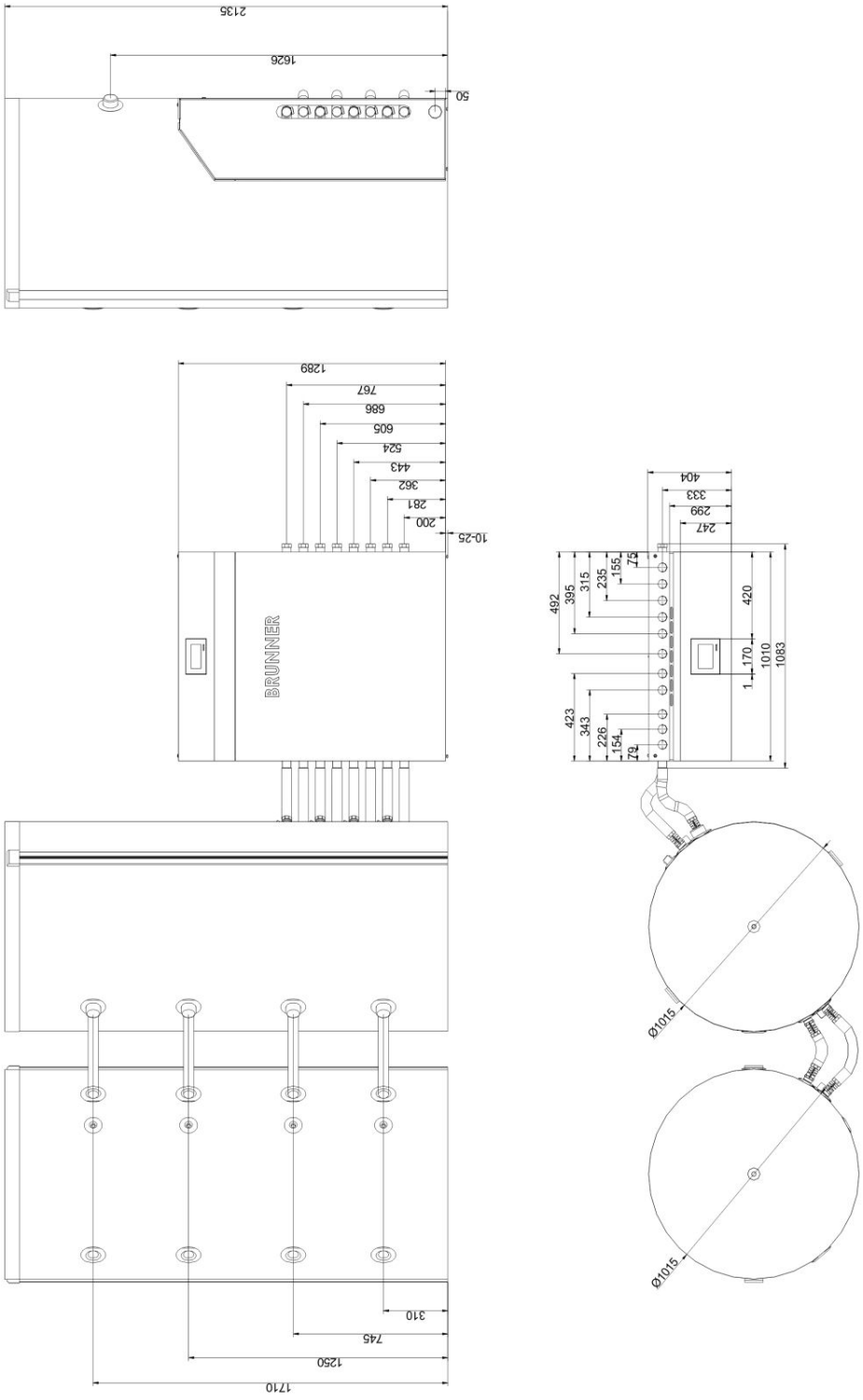


Illustration 4: BRUNNER Heating Center with main storage tank and standard storage tank, each 1000 Liter

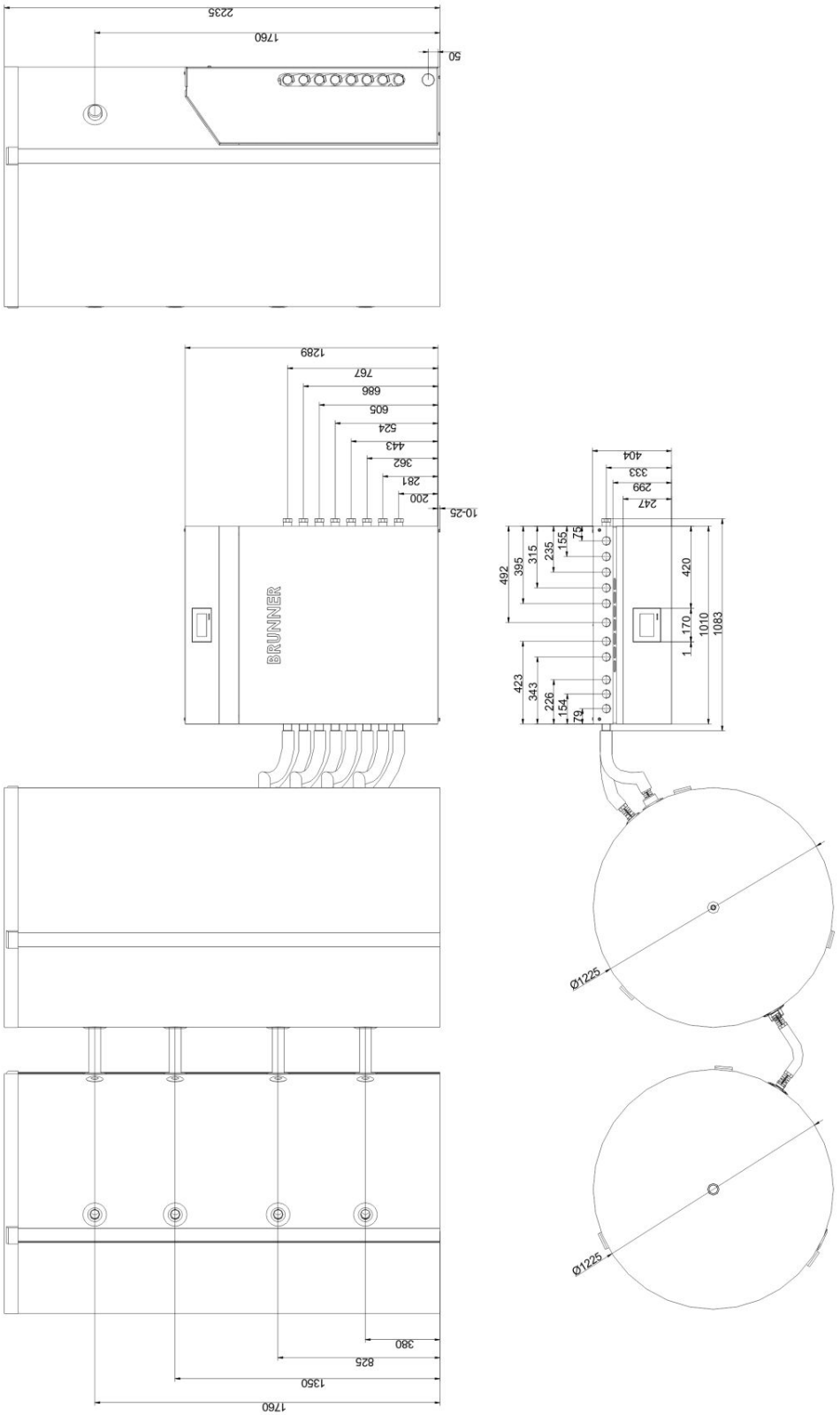


Illustration 5: BRUNNER Heating Center with main storage tank and standard storage tank, each 1500 Liter

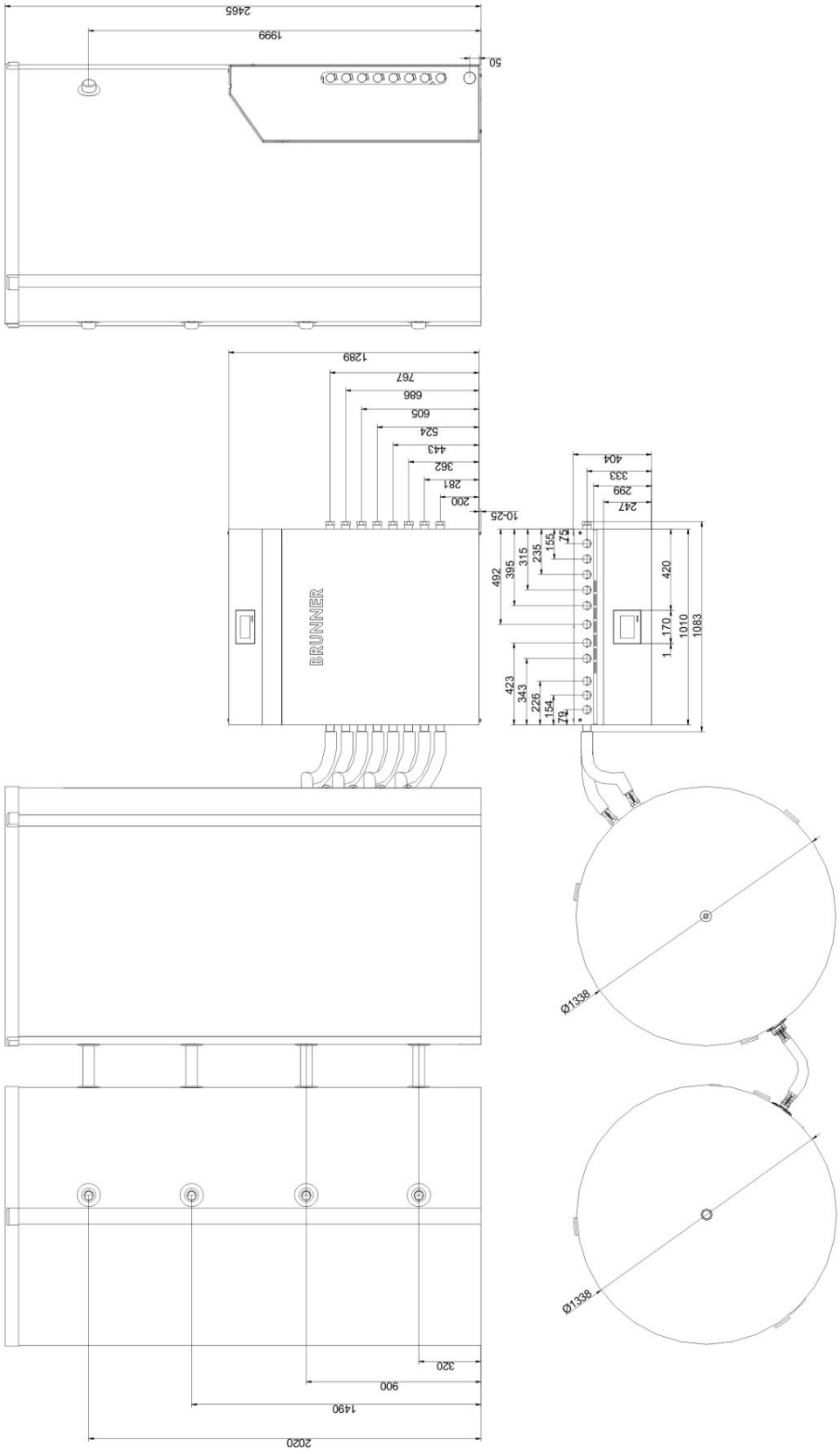


Illustration 6: BRUNNER Heating Center with main storage tank and standard storage tank, each 2000 Liter

5 Commissioning

5.1 Start-up

CAUTION

The start-up procedure and heating up must be supervised by a professional.

Before start-up and connecting the system to electric network, the storage tank must be filled with water.

6 Cleaning and maintenance

CAUTION

Risk of scalding

Hot water can cause serious burns.

→ If you notice a leak or droplets, do not touch.

CAUTION

Risk of electric shock

Parts of the system are under high voltage.

→ Before touching please make sure that the power supply is switched off.

CAUTION: Electric parts cannot have contact with water.

Parts of the Standard storage should be periodically cleaned and checked.

After a long operation, some components of the heating system can tend to cause malfunctions. Let your heating expert replace these parts.

Recommendation: Use only original replacement parts!

Observe the maintenance instructions of each heat generator and heat consumer installed in your system.

For the Standard storage we recommend **cleaning of external surfaces** on a regular basis:

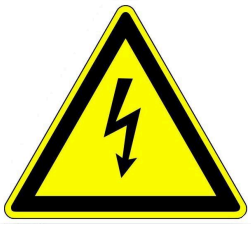
In order to do so, please follow the steps below:

- Clean or wipe the external panels with a damp cloth. To prepare a cleaning solution, add only a few drops of liquid household cleaner. Do not use any sharp or aggressive cleaning agents, no abrasive cleaning pads, no chemical solvents (e.g Nitro, Triclor, etc.).

It is recommended**,** that a **regular inspection** of the complete heating system is performed, including storage tank. This inspection shall include:

- Visual inspection of water circuit: venting and/or refilling of heating circuits, if applicable. Please make sure, that no air will get into the heating circuit.
- Inspection of thermal insulation on all piping.
- Inspection of existing electric circuits: supply voltage; tightening of connections; power consumption; condition of electric wiring, etc.
- Inspection of mechanic parts: tightness of screws - retighten, if necessary.
- Inspection of water connections, valves, all sealed pieces;
- Check venting function - after venting, the system must be refilled with water, if applicable. Check the pressure of heating circuits.
- Check parameters of the system and the heating - perform relay tests with the BRUNNER Heating Center; Check proper function of valves, cocks and installed electric accessories, and replace faulty parts immediately (refer to manufacturer's instructions, if necessary).

7 Decommissioning and disposal



CAUTION

Risk of electric shock

→ Before decommissioning disconnect the power supply of all components.

For temporary decommissioning, the Standard storage does not have to be empty. Exception: If the storage tank is in a frost-prone room, it must be emptied prior to onset of cold weather, if the device is out of service for several days.

When there is a **risk of freezing** - please remember that not only the water inside the Standard storage and the hot water lines can freeze, but also in all cold water supply lines for the water taps and the device itself. Therefore it is reasonable to drain all water conducting fittings and lines (heating circuits too) up to the frost protected part of the domestic water system (house water connection).

Draining

CAUTION

Hot water can cause serious burns.

Hot water can run off while draining.

→ Before decommissioning, wait until the storage tank is cool.

During draining, the Standard storage must be secured against negative pressure.

Final decommissioning and disposal

To prepare the Standard storage for final decommissioning and disposal, please follow the instructions below:

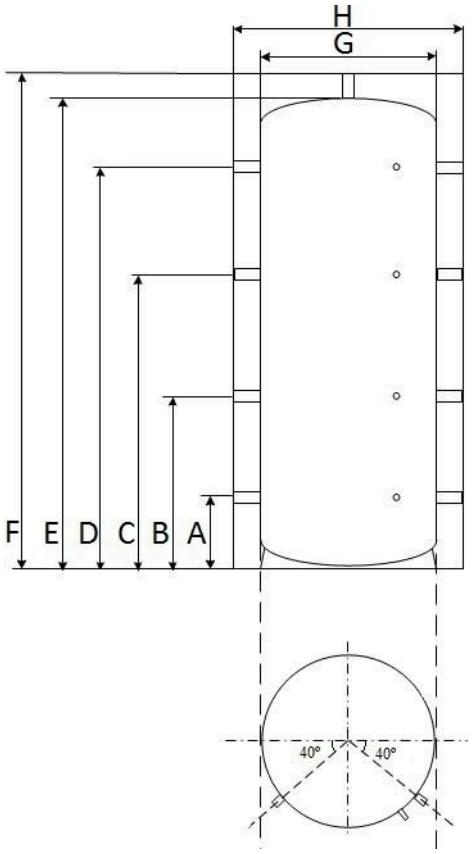
1. Shut down or perform decommissioning of the connected heat generators;
2. The breather of the Standard storage must be completely open;
3. Attach a hose on filling and draining cock;
4. Lead the open hose end to an appropriate draining point;
5. Drain water completely;
6. Disconnect all connections;
7. Remove insulation;
8. Perform disassembly in reverse order for installation;
9. Dispose of the parts according to regulations.

→ The Standard storage is decommissioned.

8 Technical data BRUNNER Standard Storage Tank

Parameter	Unit	750 L	1000 L	1500 L	2000 L
Nominal capacity	l	750	1000	1500	2000
Operating pressure, max.	bar	3	3	3	3
Operating temperature, max.	ºC	95	95	95	95
Hydraulic connections (9 pcs.)	DN (inch) (female)	40 (1 1/2“)	40 (1 1/2“)	40 (1 1/2“)	40 (1 1/2“)
Sleeves for temperature sensors (4)	DN (inch) (female)	15(1/2“)	15 (1/2“)	15 (1/2“)	15 (1/2“)
Height with insulation	mm	1785	2135	2235	2465
Height without insulation	mm	1700	2050	2150	2380
Diameter with insulation	mm	1015	1015	1225	1338
Polyester fleece insulation with clamp lock, (WGL035)	mm	100	100	100	100
Storage tank insulation class according to DIN EN 13501-1/ DIN4102-1		E/B2	E/B2	E/B2	E/B2
Diameter without insulation (transport dimension)	mm	790	790	1000	1100
Weight of storage tank	mm	1750	2090	2270	2460
Weight of storage tank	kg	86	100	185	227
Weight of insulation	kg	20	24	31	37
Standby power consumption according to EN12897	kWh/24h	3	3,4	4,0	4,7
Standing loss (directive 2010/30/EU)	W	108	126	153	180
Possible storage tank combinations	l + l	750+750	1000+1000	1500+1500	2000+2000

9 Dimension sheet BRUNNER-Standard storage



	Function	750 L	1000 L	1500 L	2000 L
		Connecting heights			
A	Connections on storage tank	260	310	380	320
B		630	745	825	900
C		1030	1250	1350	1490
D		1430	1710	1760	2020
E	Height without insulation	1700	2050	2150	2380
F	Height with insulation (without breather)	1785	2135	2235	2465
G	Diameter without insulation	790	790	1000	1100
H	Diameter with insulation	1015	1015	1225	1338
	Tilt height	1750	2090	2270	2460

Typ of connections: A-B - water connections = 1 1/2“ ans sensor connections = 1/2” female

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