ÖkoFEN

Installation manual

Accumulator 600–2000 liter

ENGLISH

PE590 EN

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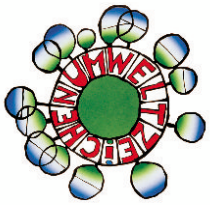
Contents

1 Dear Customer

Proficiency, innovation and quality combined. This is the tradition on which ÖkoFEN shapes the future. We are very pleased that you too have decided to purchase a product from ÖkoFEN.

- This manual is intended to help you operate the product safely, properly and economically.
- Please read this manual right through and take note of the safety warnings.
- Keep all documentation supplied with this unit in a safe place for future reference. Please pass on the documentation to the new user if you decide to part with the unit at a later date.
- Please contact your authorised dealer if you have any questions.



ÖkoFEN attaches great importance to the development of new products. Our R&D Department repeatedlychallenges the effectiveness of tried-and-tested systems and works continuously on improvements. In thisway, we secure our technological advantage. We have already received many national and internationalawards for our products.

All our products comply with European standards in respect of quality, efficiency and emissions.

2 Intended use

The ÖkoFEN hot water tank is designed for the heating and storage of heating and domestic water in single or multi-family dwellings and commercial buildings. Use of the ÖkoFEN hot water tank for other purposes is not permitted.
No reasonably foreseeable forms of misuse are known.

3 Types of safety warning sign

The warning signs use the following symbols and texts.

Types of safety warning sign

1. Risk of injury
2. Consequences of risk
3. Avoiding risk

⚠DANGER

Danger - indicates a situation that could lead to death or lifethreatening injury.

⚠WARNING

Warning - indicates a situation that could lead life-threatening or serious injury.

⚠CAUTION

Caution - indicates a situation that could lead to injury.

NOTICE

► indicates a situation that could lead to property damage.

4 Requirements for an accumulator

4.1 Guidelines and Standards for an accumulator

The current versions of the relevant national standards must be observed.

Austria – H 5195-1, published 01/12/2010

Prevention of damage in closed-circuit hot water heating systems.

- Contamination:

  Dirt and other contaminants represent significant contributory factors to corrosion. The introduction of contamination into the heating system must therefore be prevented. This must be taken into consideration as early as the planning stage.

- The operator of the heating system is responsible for conducting tests on the condition of the heating water.

- Such tests must be conducted no less than every 2 years on heating systems with a water capacity of up to 5000 litres and no less than once a year on systems with a capacity of over 5000 litres.

- Flushing water:

  The water used for flushing the system prior to initial startup or re-commissioning must be clear, odourlessand free of suspended matter below 25 µm.

- A system report must be prepared for every system after initial startup and re-commissioning.

- Replenishing water must be odourless and free of suspended matter below 25 µm. If the annual amount ofreplenishing water exceeds the capacity of the expansion tank, the following parameters must be compliedwith.

Water capacity	Degree of German hardness
Up to 1000 litres	Up to 17
Über 1000 – 5000 litres	Up to 6
Über 5000 litres	Up to 0,5

- If protective agents are used, compliance must be ensured with the permissible concentration range in heating water.

Type of protective agent	Permissible concentration [mg]
Phosphate P2O5	5 - 30
Polysilicates, SiO2	20 - 60
Polysilicates,	10 - 50
Sulphide denoted as SO3	10 - 30
Molybdate denoted as MoO4	150 - 500

Germany – VDI 2035, published 10/2009
Sheet 1 — Scale formation in DHW and hot water heating systems.

Sheet 2 — Water-side corrosion in DHW and hot water heating systems.

4.2 Manufacturer's Guidelines

Compliance with the manufacturer's guidelines ensures that your system is an example of state-of-the-art technology and also secures your warranty entitlements.

In all work, you must observe the current applicable legal requirements and the relevant safety regulations:

- for Austria: ÖNORM, EN, ÖVGW-TRF and ÖVE
- for Germany: DIN, EN, DVGW, TRGI, TRF and VDE
- for Switzerland: SEV, SUVA, SVGW, SVTI, SWKI and VKF

You must also observe the connection requirements for the domestic hot water supply equipment and instructions for the heat generator.

The following points must be observed:

1. Installing the heating system:

   - The cylinder may only be connected to closed-circuit heating systems.
   - The cylinder may only be connected to approved piping systems.
   - ÖkoFEN recommends the installation of a DHW mixer as scalding protection.
   - The piping must be insulated sufficiently to reduce cooling losses.
   - The building clearance for installing and removing the cylinder must be ensured.
   - The cylinder must be installed in such a way that it can be shut off and emptied.
   - ÖkoFEN recommends use of a pressure regulator in the DHW building connection.
   - A fine filter (backwash filter) must be installed in the DHW building connection.
   - The pH value must be at least 5.0.
   - Materials that emit chlorides (e.g. seals) are prohibited.
   - In the case of connection to galvanised pipes, no iron or zinc particles may be washed into the DHW heat exchanger. It is advisable to install a dirt trap.
   - If a corrosion protection additive is employed, it must be compatible with stainless steel.

2. Loading the accumulator

   Optionally, the speed of this pump can be controlled by the boiler controller. Provision mustbe made for a safety pressure relief valve (3 bar) in the accumulator loading circuit.

1 heating circuit

Boiler controller terminal → Output ZW (hot water)

NOTICE

When using 1 heating circuit, at least software version 4.00 is required

2 heating circuits

Boiler controller terminal → Output UW

Regardless of the software version, a heating circuit controller is required for two heating circuits.

3. Underfloor and wall heating

NOTICE

Material damage

Use of a flow temperature limiter in low-temperature systems. Electrical connection of the temperature limiter according to manufacturer's guidelines.

The accumulator is connected to an underfloor heating system via a mixed heating circuit.

In the case of underfloor heating systems with plastic pipes according to DIN 4727 (PD), DIN 4728 (PP type 2) and DIN 4729 (VPE) (not 100% impermeable to oxygen diffusion), the following is advisable:

- Corrosion-resistant heat exchanger for system separation
- Anti-corrosion agent

Corrosion and sedimentation damage attributable to disregarding these recommendations will not
be compensated.

In the case of underfloor and wall heating systems with plastic piping impermeable to oxygen according to DIN 4726 E or with copper piping, there are no additional requirements.

4. Radiator heating

As standard, the accumulator is connected to a radiator system with a mixed heating circuit. As standard, the buffer tank achieves a temperature of at least 60°C.

5. Solar thermal system

Both flat-plate and tubular collectors can be connected to the buffer tank. In order to prevent damage to the collectors, pay attention to the correct concentration of antifreeze in the heat transfer medium.

NOTICE

A heat exchanger register for connection to a solar thermal system is not provided. This can be realised by an external plate heat exchanger.

4.3 Notices for correct operations

- The installer must check that the flange bolts are properly tightened before starting up the system. The maximum tightening torque must not exceed 25 Nm.
- A suitably sized expansion vessel must be installed on the hot water circuit.
- Install a suitable, according label and application, safety valve in the cold water inlet.
- Operation of safety valves must be checked periodically. Periodic control, maintenance and replacement of magnesium anode are prerequisites for the guarantee.
- In case of water with a hardness > 17 ° dH (= 30 ° TH), it is advisable to use specific products in order to avoid excess limestone build-ups.
- Grounding connection is mandatory.

4.4 Installation Room

The Accumulator can be installed either in the boiler room or a neighbouring room.

Conditions in the installation room:

- The access opening must be at least as large as the maximum unit dimension of the Accumulator.
- The ceiling height must at least correspond to the height of the Accumulator with insulation (without ventilation).
- The installation room must be frost-proof.
- The floor of the installation room must be capable of bearing the whole weight of the Accumulator after filling.

5 Product Description

FUNCTION DESCRIPTION

The accumulator is installed between power sources and energy consumers.
It absorbs the energy when it is available and holds it in readiness for when it is needed.
One or more power sources provide the accumulator with energy. One or more consumers draw energy from the accumulator.
The accumulator can be used for energy management and storage for solar systems and pellet heating systems.

The POWER SOURCES

Solar

The solar system supplies the accumulator with energy by means of solar heat exchangers.

Pellematic pellet boiler

The pellet boiler supplies the accumulator with energy by means of water exchange. The pellet boiler needs a storage tank to achieve a minimum burner running time. If the operating periods are too short, the efficiency of the boiler is reduced and the boiler is soiled unnecessarily.

The ENERGY CONSUMERS

Heating

The heating system draws energy from the accumulator using the temperature difference between flow and return.

Hot water

The hot water system draws energy from the accumulator either via a DHW flow heat exchanger or an external fresh water module.

Secondary return line

The secondary return line pre-heats the domestic hot water, while drawing the energy required from the accumulator.
It is particularly important to minimise the running times of the return pump to the greatest possible extent to prevent unnecessary energy losses.
Use timer-controlled and temperature-controlled return pumps.

5.1 Model Sizes - Technical Data

Accumulator	600	800	1000	1500 **	2000 **
Tank volume	571 liter	732 liter	925 liter	1515 liter	2054 liter
Diameter without insulation	700 mm	790 mm	790 mm	1.000 mm	1100 mm
Diameter with insulation	900 mm	990 mm	990 mm	1200 mm	1300 mm
Height without insulation	1644 mm	1686 mm	2041 mm	2152 mm	2377 mm
Height with insulation	1700 mm	1760 mm	2090 mm	2200 mm	2420 mm
Tilted height	1690 mm	1740 mm	2085 mm	2215 mm	2450 mm
Weight (depending on type)	84 – 156 kg	97 – 202 kg	114 – 232 kg	162 kg	225 kg
Materials					
Tank	ST 235 JR	ST 235 JR	ST 235 JR	ST 235 JR	ST 235 JR
Corrugated pipe heat exchanger for drinking water	1.4404	1.4404	1.4404	-	-
Smooth pipe heat exchanger	ST 235 JR	ST 235 JR	ST 235 JR	-	-
Max. operating pressure					
Heating circuit	3 bar	3 bar	3 bar	3 bar	3 bar
Corrugated pipe heat exchanger for drinking water	10 bar	10 bar	10 bar	-	-
Solar smooth pipe heat exchanger	10 bar	10 bar	10 bar	-	-
Heat exchanger area (depending on type)					
Corrugated pipe heat exchanger for drinking water	5 m^2	6 m^2	7,5 m^2	-	-
1. Solar smooth pipe heat exchanger	2,4 m^2	2,8 m^2	3,0 m^2	-	-
2. Solar smooth pipe heat exchanger	-	2,0 m^2	2,4 m^2	-	-
Heat exchanger capacity					
Corrugated pipe heat exchanger for drinking water	25 l	30 l	38 l	-	-
1. Solar smooth pipe heat exchanger	18 l	21 l	23 l	-	-
2. Solar smooth pipe heat exchanger	-	15 l	18 l	-	-

NL rating according to DIN 4708–3 ***					
With 12 kW afterheating	NL 2	NL 2	NL 4		
With 15 kW afterheating	NL 2,5	NL 2,5	NL 5		
With 20 kW afterheating	NL 3	NL 3	NL 6		
With 25 kW afterheating	NL 4	NL 4	NL 7		
With 32 kW afterheating		NL 4,5	NL 8		
With 36 kW afterheating		NL 5	NL 9		

Discharge					
without afterheating (at 63° C accumulator temp., through-loaded, 40° C water delivery, 15 l/min)	480 l	555 l	720 l	-	-
Max. water delivery*	30 l/min	30 l/min	50 l/min	-	-

Energy efficiency labelling					
Insulation	fleece 100 mm	fleece 100 mm	fleece 100 mm	fleece 100 mm	fleece 100 mm
Standby losses [kWh/24h]	2,71	2,81	3,46	4,09	4,90
Energy efficiency class	C	C	C	C	D
Standing loss [W]	113	117	144	170	204

* dependent on constructural parameters such as water pipe sizes.

6 Transport and Placement

6.1 Transport

The accumulator is mounted securely on a pallet.

NOTICE

Material damage

The accumulator must be stored under a roof in a dry environment.
The rainproof packaging offers no protection against surface rust.

6.2 Notes on bringing the unit into the building

1. Remove the cylinder from the pallet.
2. Transport the cylinder to its destination.

The cylinder must be freely accessible within a radius of 0.5 m.
The building clearance for installing and removing the cylinder must be ensured.
Provision must be made for a space requirement around the accumulator for connection and maintenance of the complete hydraulic system.

NOTICE

Installing the accumulator

Use the standing ring for installing the accumulator!

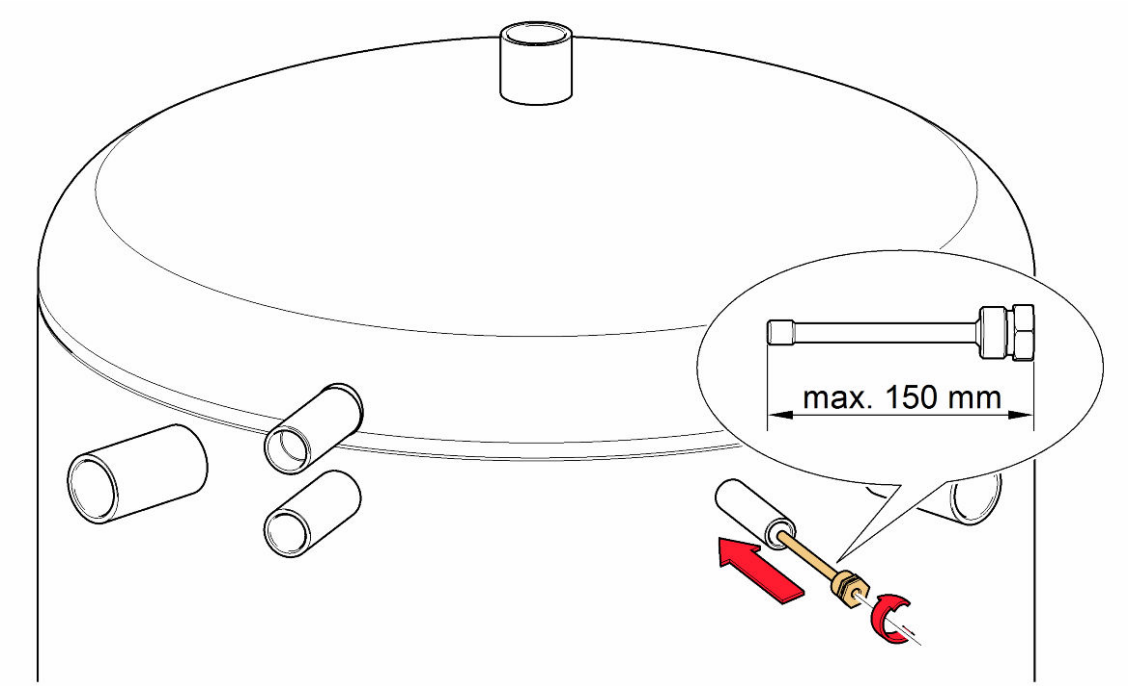
7 Installing the accumulator

7.1 Setting Up the accumulator

After bringing the unit into the installation room, it must be installed and set up.

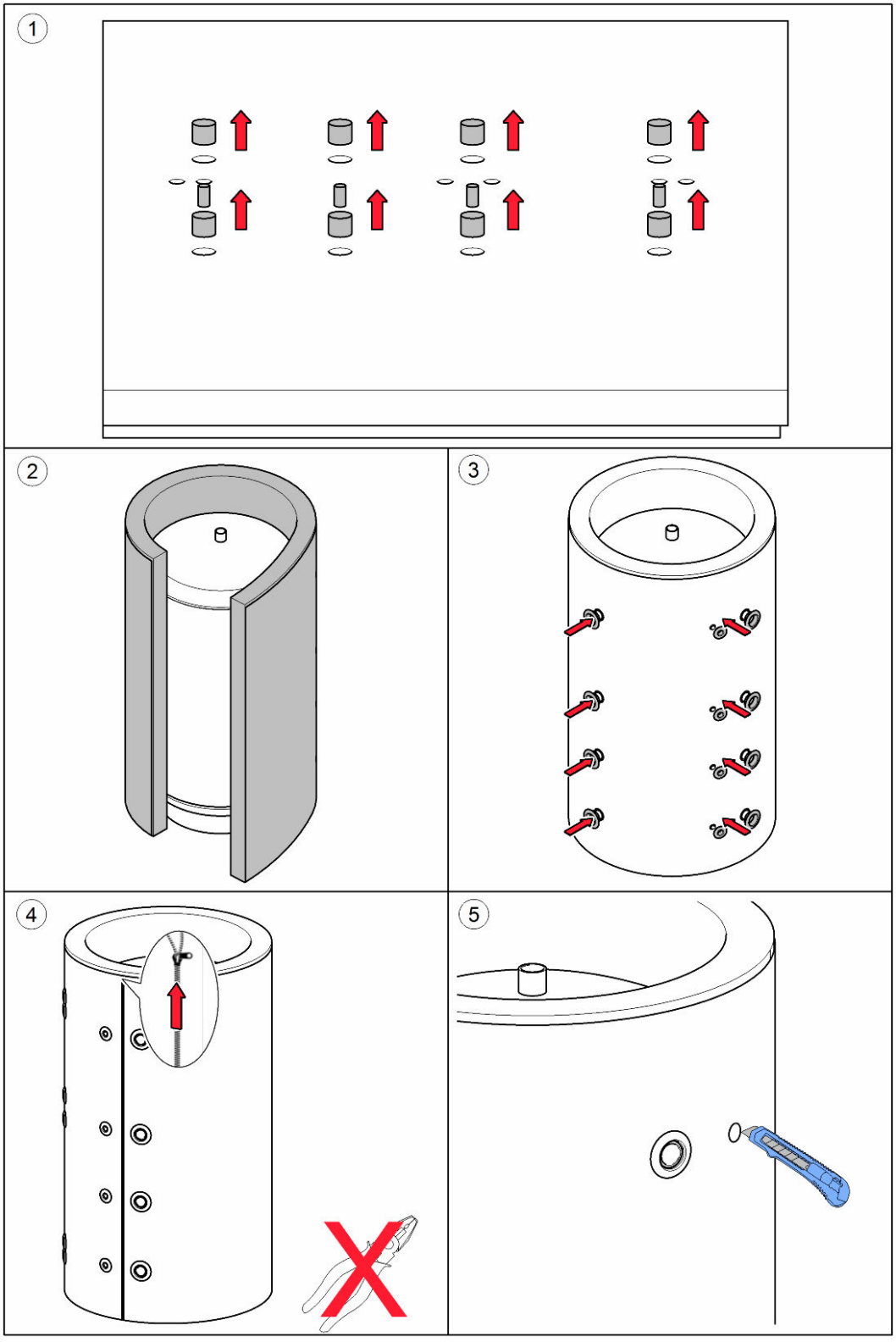
1. Installing the accumulator.
2. Positioning the accumulator in the installation room.
3. Setting up the accumulator horizontally with the help of a water level.

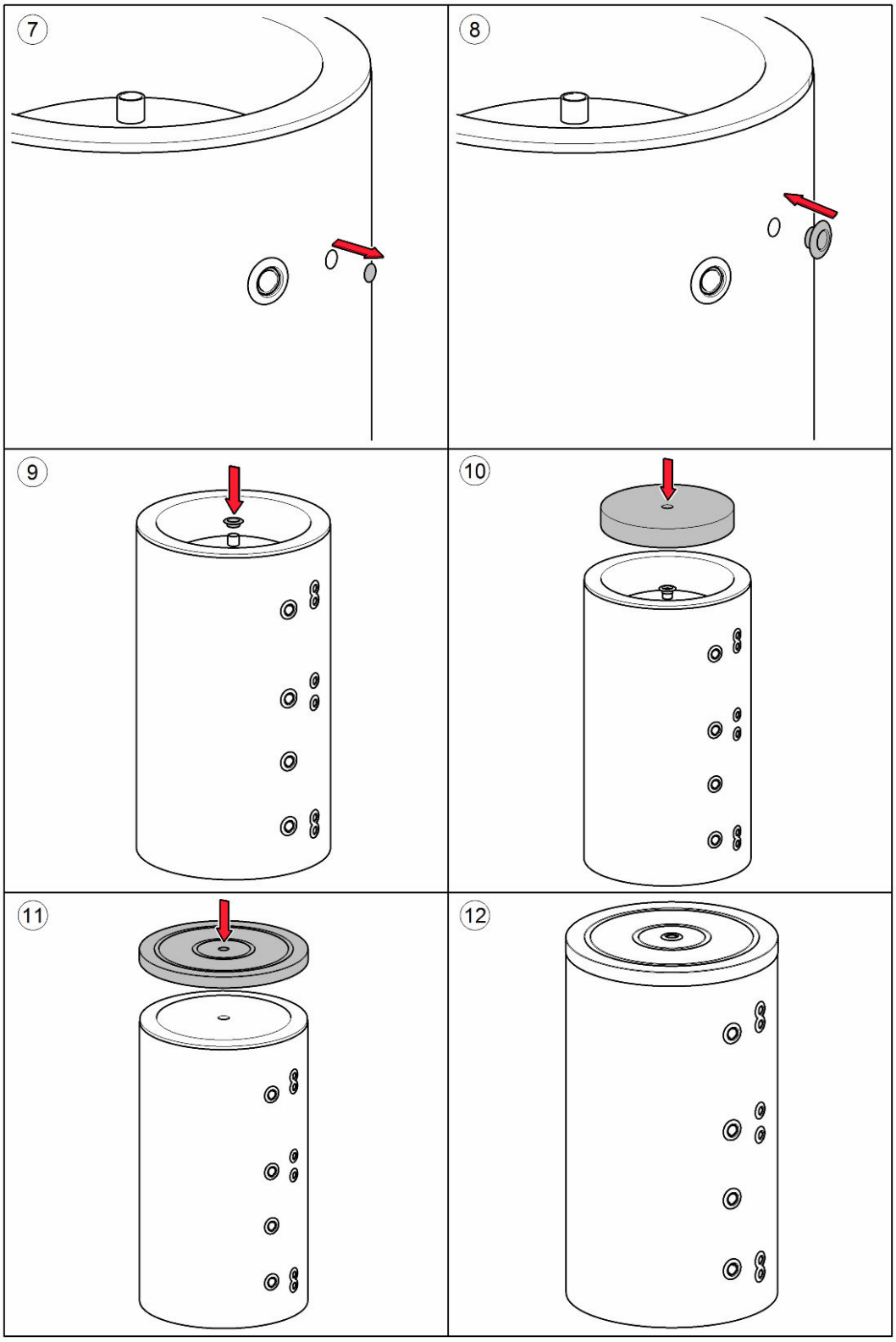
7.2 Mounting the thermowells



7.3 Removal of the accumulator tank insulation

First place the floor insulation!





NOTICE

Damage to hydraulics

Do not forget to provide ventilation.
We recommend a manual or automatic vent that is directed to the outside of the insulation, rather than mounted directly on the cylinder.

7.4 Installing the Additional Cylinder

1. The process of bringing the additional cylinder into the building and installing it is the same as that for all other types of the accumulator.

When installing and setting up the additional cylinder, the same height must be attained as for the adjacent accumulator.

Distance between accumulator and additional cylinder

Model size of the accumulator and additional cylinder	Distance between centre of accumulator and centre of additional cylinder	Space between the insulated cylinders.
600 litres	1080 mm	approx. 150 mm
800 litres	1120 mm	approx. 80 mm
1000 litres	1120 mm	approx. 80 mm

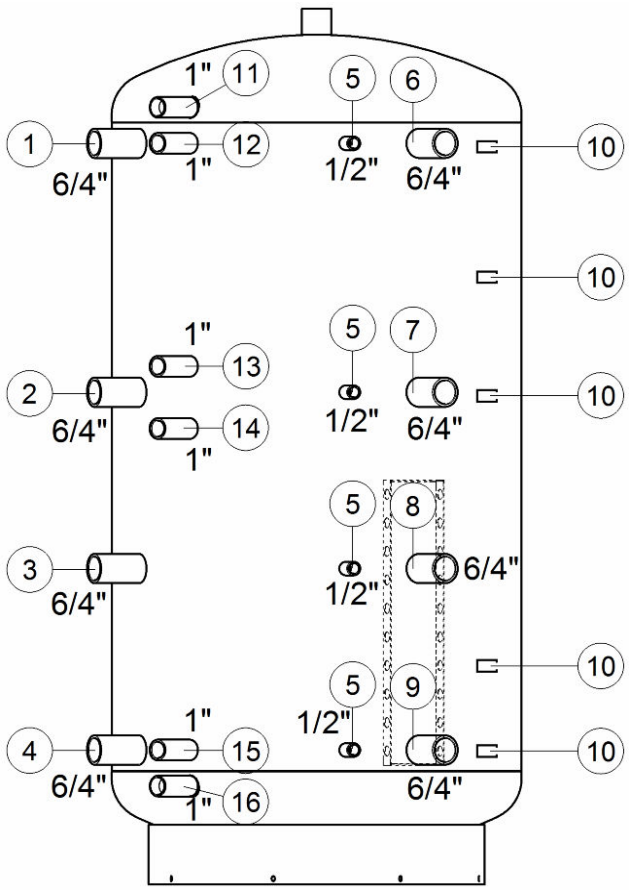
2. Installation is reduced to installing the insulation and connection to the accumulator.

3. See Section Installing the Insulation

8 Connecting up the hydraulics

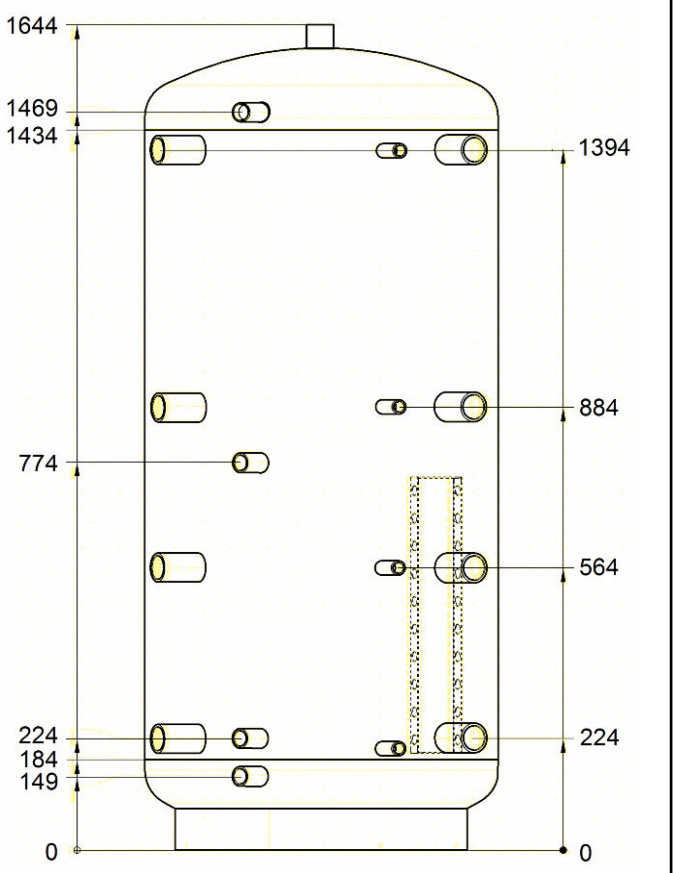
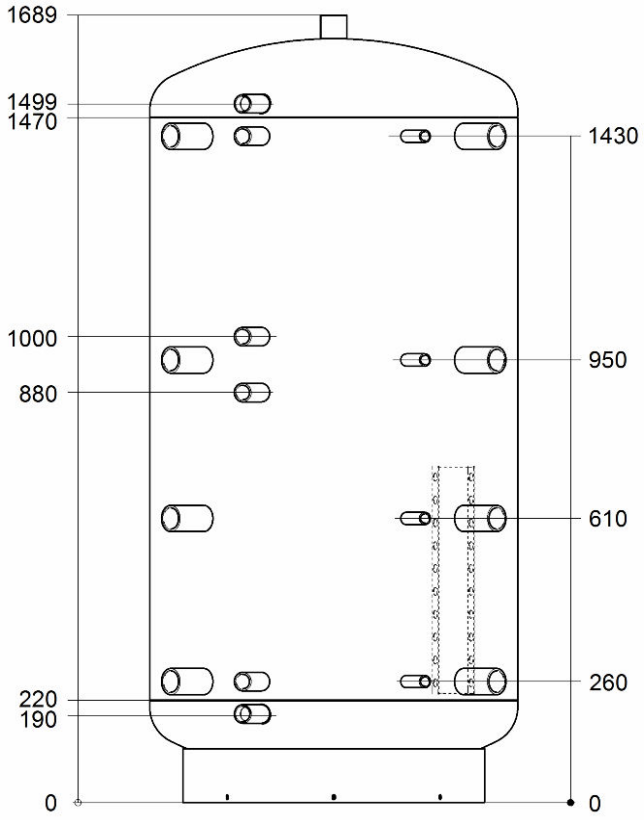
8.1 Connector Arrangement

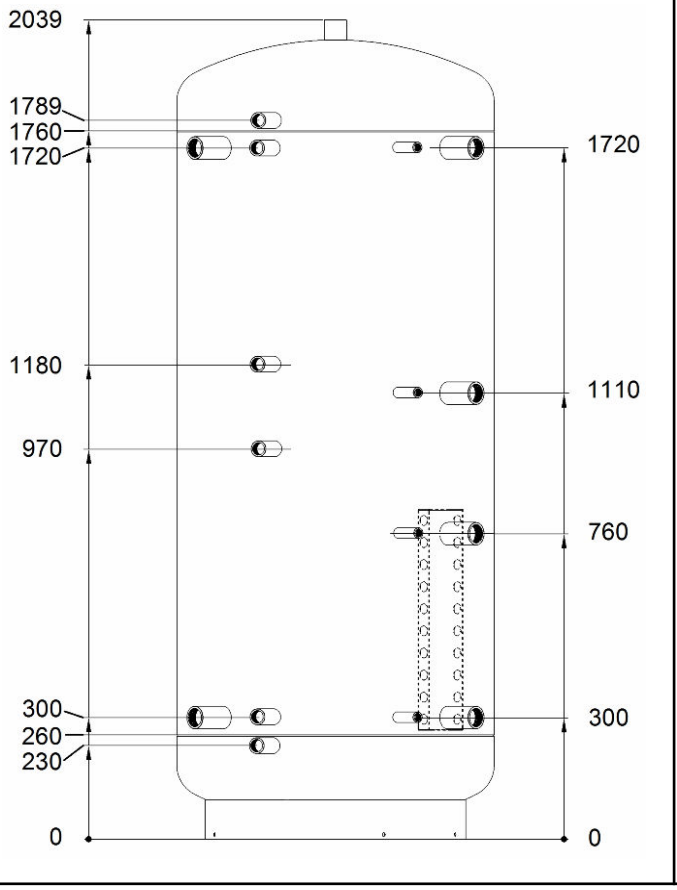
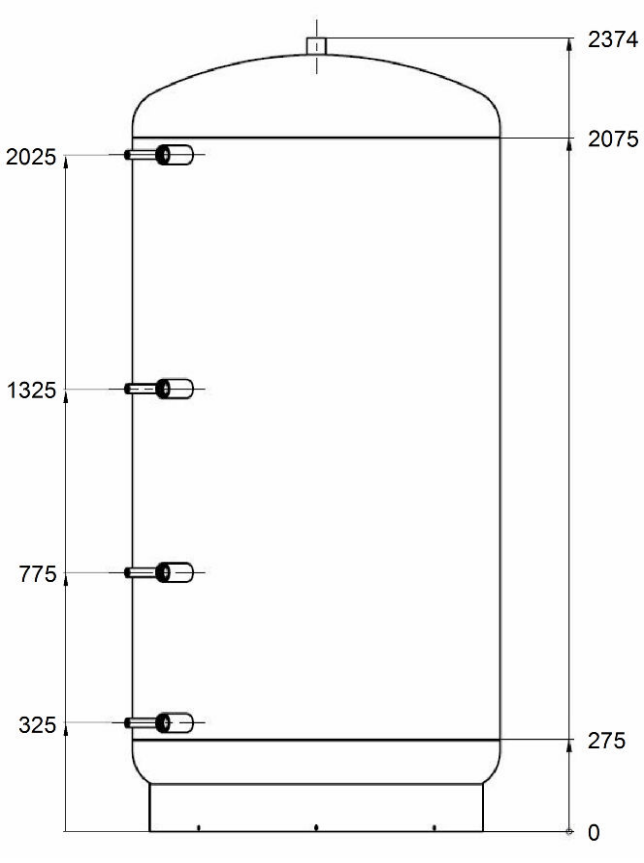
The connector arrangement shows where and at what height the connectors are located for the hydraulic connections. Mind in any case our Hydraulic connecting diagrams in the boiler instructions!

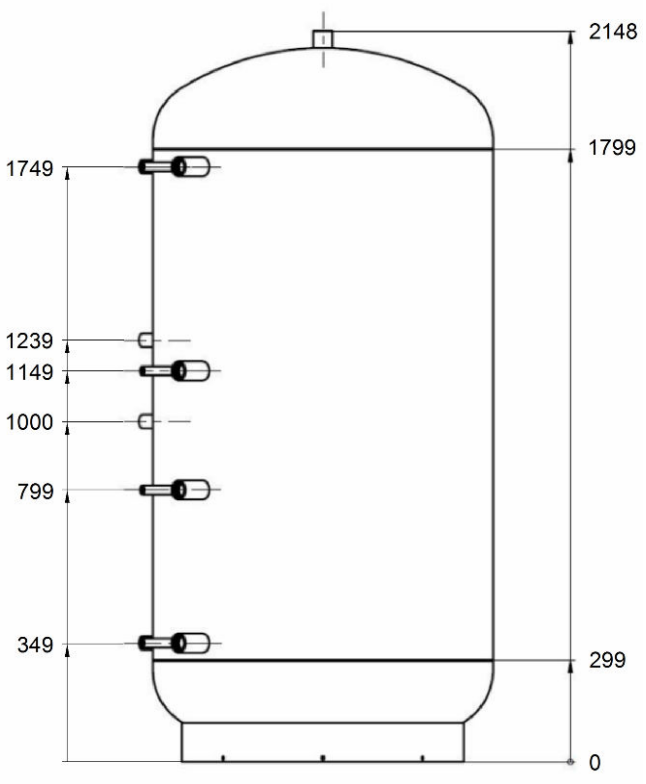


1	Boiler flow – with baffle plate
2	disposable
3	disposable – with baffle plate
4	Solar loading flow – with baffle plate
5	Solar sensor or heating circuit sensor
6	disposable
7	disposable
8	disposable *
9	disposable *
10	Sensor pocket
11	DHW connection – mains water
12	Flow upper solar register
13	Return upper solar register
14	Flow lower solar register
15	Return lower solar register
16	Cold water connection mains water

*) is led into the return channel layer.

Accumulator 600 liter	Accumulator 800 liter
	

Accumulator 1000 liter	Accumulator 1500 liter
	

Accumulator 2000 liter	
	

All dimensions in mm!

The baffle plates at the connections have the purpose to make a proper stratification possible or rather to avoid a influenced stratification. Basically the baffle plate at the hydraulic connection does not have to be considered not separately but the installation of a heating rod for instance is not possible when the baffle plate is not bent up. The return channel layer makes it possible to integrate different flow temperatures into the accumulator on the secondary side (heating return) optimally. Thereby unnecessary mixings of the water temperature are avoided, which leads to fewer boiler starts and therefore to an energy saving.

8.2 Hydraulic Connection of the Secondary Return Line

The return pump is controlled by the Pelletronic Touch (time program) and a return temperature sensor.
The running time of the return pump must be as short as possible. The pump should only be activated at times when there is a requirement for hot water. The running time must be adapted to the supply network.

In order to maintain heat stratification in the cylinder, the circulation lance is mounted in the corrugated tube heat exchanger at the accumulator´s hot water outlet. It can therefore be connected to the domestic water system in the building.
The secondary return line must be connected to the domestic hot water pipe by means of threaded couplings.

Secondary return line

NOTICE

Material damage - heat loss

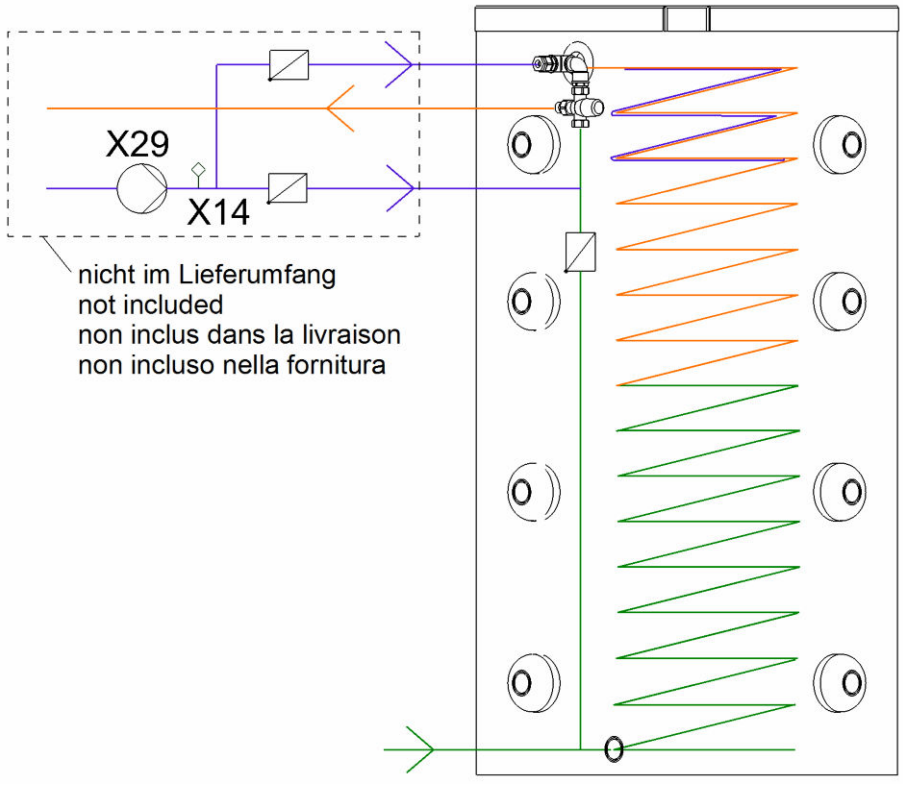
The accumulator must be installed properly.
Pay attention to the flow direction of the secondary return line.
Non-return valves must be fitted.

NOTICE

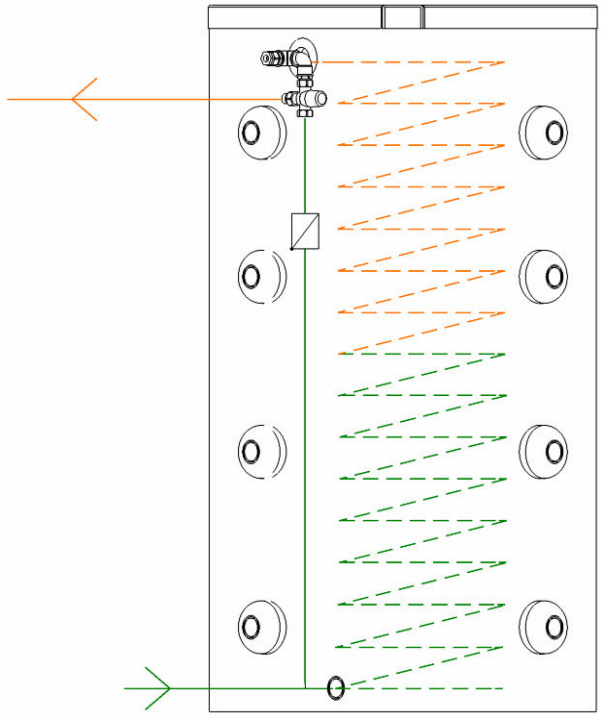
Risk of corrosion

Stainless steel must be handled with appropriate tools.

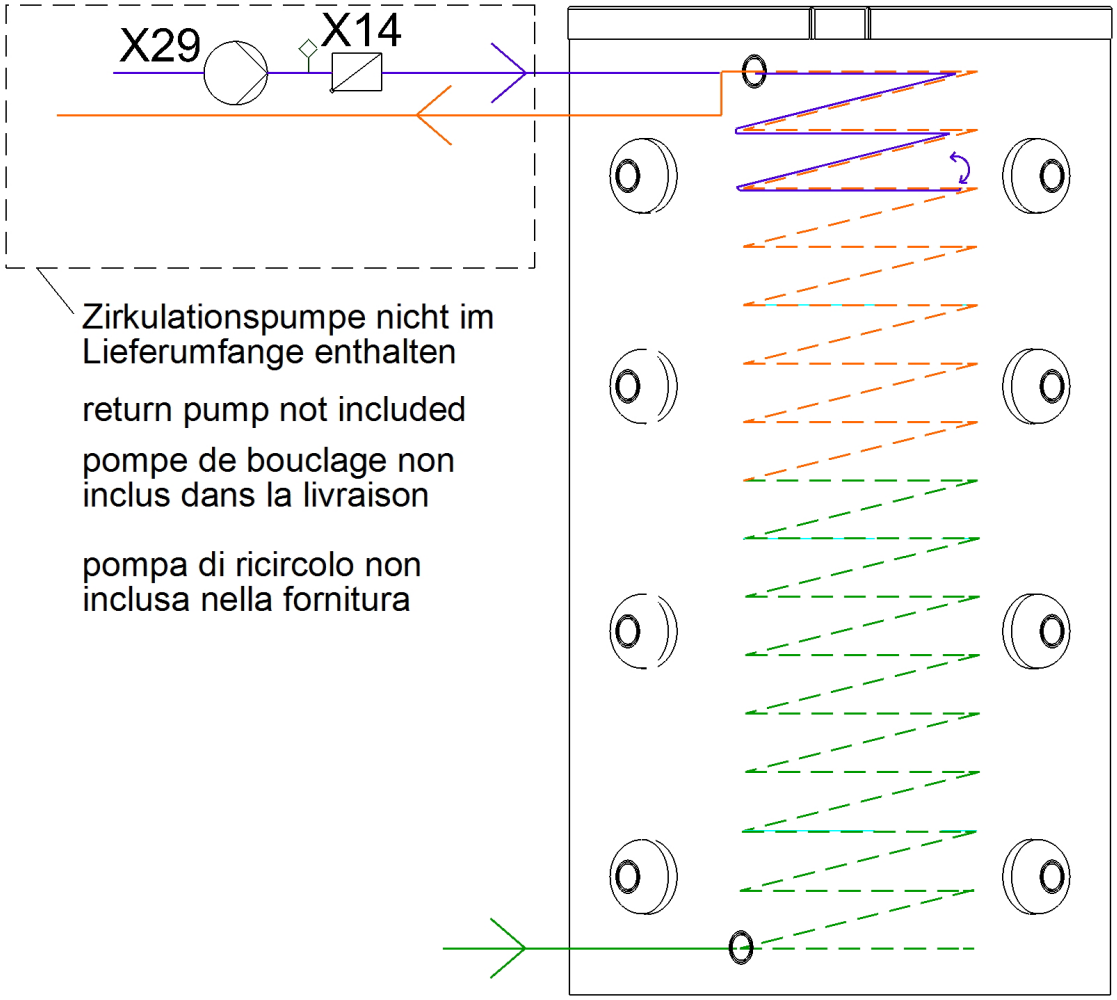
Scheme DHW blending + circulation (Art. no.: 80123–1):



Scheme DHW blending (Art. no.: 80118-1):



Scheme circulation (Art. no.: 80120-1):



⚠CAUTION

Installation

The required additional parts are in the scope of supply of the ordered sets and are to be assembled on site according to the schmes above.

9 Starting up for the first time

9.1 Checking the Leak Tightness

Before filling, check all couplings and connections for leak tightness.

9.2 Filling

On initial startup, the heating system must be flushed with twice the amount of water that is contained in thesystem. The water used for flushing the system prior to initial startup or re-commissioning must be clear, odourless and free of suspended matter below 25 µm. After flushing, filling water of an appropriate waterquality must be introduced into the heating system.

The filling water must comply with the latest versions of the relevant national standards:

Austria – ÖNORM H 5195-1, published 01/12/2010

Prevention of damage in closed-circuit hot water heating systems.

Germany – VDI 2035, published 09/2010

Sheet 1 — Scale formation in drinking water and hot water heating systems.

Sheet 2 — Water-side corrosion in drinking water and hot water heating systems.

9.3 Settings

Ökofen empfehlt die Verwendung eines Brauchwassermischers.

Der Brauchwassermischer ist nicht im Lieferumfang enthalten (Ersatzteilnr.: 306007)

Prerequisites for the DHW mixer

- A fine filter (backwash filter) must be installed in the domestic hot water building connection.
- Stop valves must be installed on the hot and cold water pipes. We recommend the installation of stop valves with integrated bleeder screws.

The stop valves must be completely open during operation.

- Prior to installation of the DHW mixer, the pipes for the hot and cold water connections must be flushed to remove dirt from the system.

Installing the DHW mixer

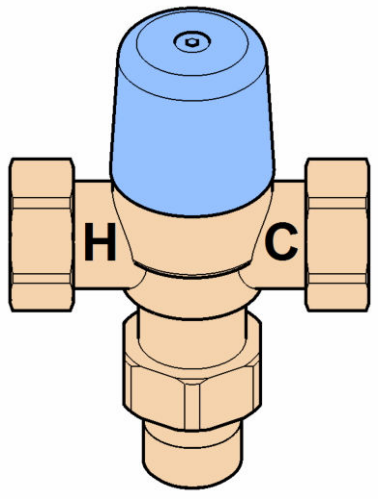
- The DHW mixer must be easily accessible when mounted to enable maintenance at a later date.
- Ensure that the mixer is compatible with the application:

Pressure range	
Maximum static pressure	10 bar
Flow pressure, hot and cold	0,2 to 5 bar

Temperature range	
Hot water feed temperature	52 to 80 °C
Cold water feed temperature	5 to 20 °C

- Check the mixer valves and filters prior to installation, along with the O-rings on the inlet. If they are already mounted on the mixer, remove them for checking.
- The "H" on the inlet valve stands for HOT (red dot on the back) and "C" for COLD (blue dot on the back).

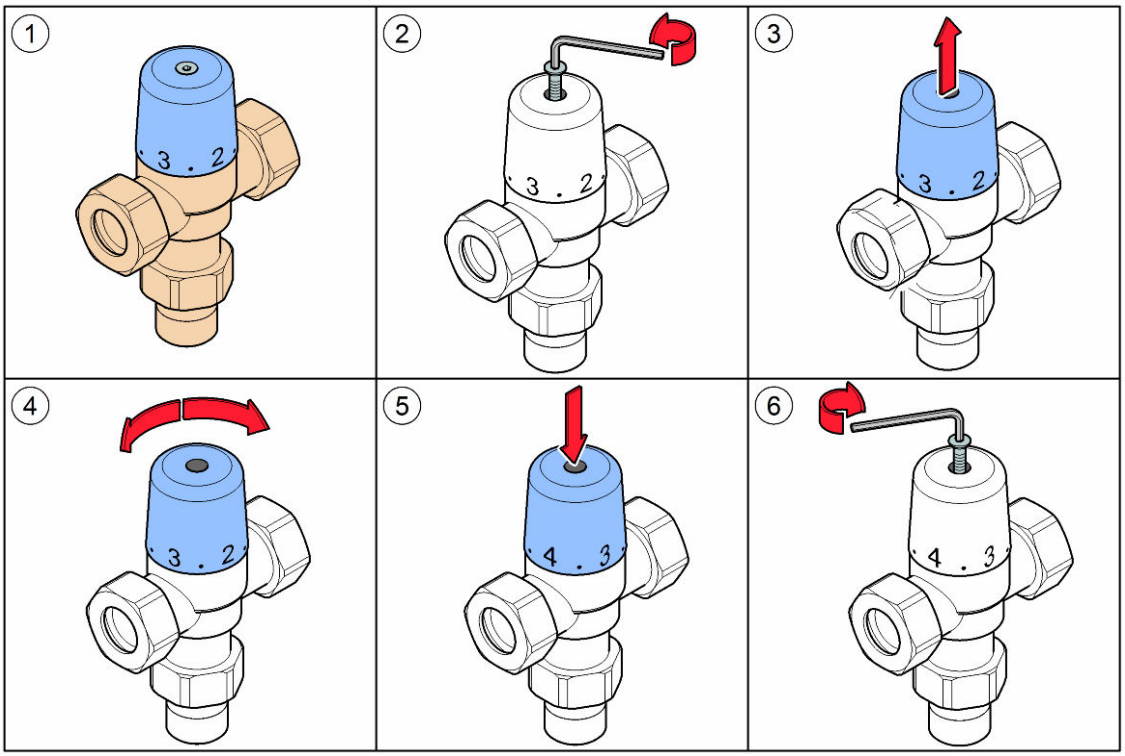
If they are connected incorrectly, the temperature will not be controlled or it will fluctuate and the warranty will be invalidated.



- Attach the sealing ring to the inlet and outlet, and screw the inlet and outlet valve to the mixer. Ensure that the threads are not over-tightened.

Setting the DHW mixer temperature

The DHW mixer is supplied with a factory default setting of 38°C. The installation conditions necessitate adjustment of the product on site. Turn the hot and cold water inlet and the main valve completely open and then set the temperature as required.



Re-attach the cover after setting to secure the valve in the correct position and prevent any tampering.

Testing the DHW mixer

A test is necessary on initial startup to obtain values that serve as reference values for subsequent tests.

	Date of the test					
1	Has the DHW mixer been installed correctly?					
2	How high is the maximum static pressure (below 10 bar)?					
3	How high is the flow pressure? (between 0.2 and 5 bar)					
4	How high is the hot water feed temperature (temperature range between 52 and 80°C)?					
5	How high is the cold water feed temperature (temperature range between 5 and 20°C)?					
6	How high has the mixed water temperature been set?					
7	How high is the mixed water temperature at higher flow velocities? (maximum opening of the water consumer)	Flow velocity:				
		Max. mixed water temp.:				
		Final mixed water temp.:				
8	How high is the mixed water temperature at low flow velocity? (small opening of the water consumer)	Flow velocity:				
		Max. mixed water temp.:				
		Final mixed water temp.:				
9	Make a note of which water consumer was opened for the test and which temperature measuring device was used.					

The final temperature of the mixed water must be determined and set on a building-specific basis.
Parameters such as scalding protection, piping protection and energy-saving settings must be considered.
Higher temperatures than the final temperature may only occur momentarily.

Malfunction of the DHW mixer

A test must be conducted in the same way as during initial startup (as described above). Use the same water consumers and temperature measuring devices.

If the temperature of the mixed water differs substantially from the previous results (e.g. > 1 K), the following points must be checked before any settings are changed:

1. Cleanliness of all in-line filters and integrated sieves.
2. Proper function of all in-line stop valves and integrated stop valves.
3. Complete opening of the stop valves.