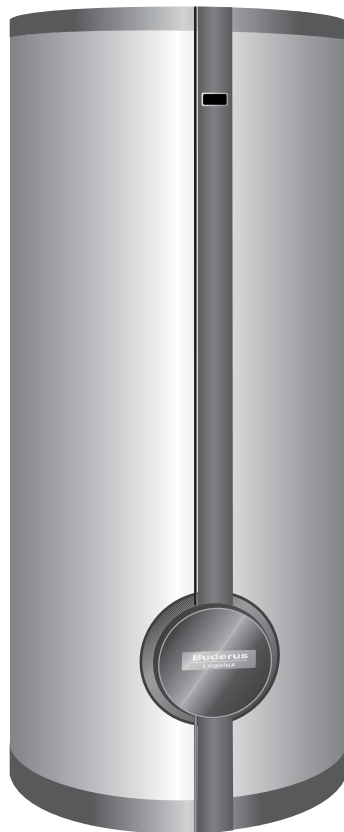


Installation and maintenance instructions

Indirect Fired domestic hot water tank
Logalux ST400/3 "US", 500/3 "US",
750/3 "US" and 1000/3 "US"



Buderus

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1 General information

1.1 Standards and guidelines



USER NOTE

Observe all standards and guidelines applicable to the installation and operation of this heating system in your country.



USER NOTE

If the storage tank will be installed in Massachusetts, it must be installed by an installer or dealer who is registered there.

1.2 Tools, materials and accessories

You need standard tools for the installation and maintenance of the DHW tank, as those typically used in gas and water installations.

A transport dolly is also useful.

2 Safety

These installation and maintenance instructions contain important information for the safe and appropriate installation, initial start-up and maintenance of the Logalux ST400/3 -1000/3 DHW tanks (in the following "DHW tank").

These installation and maintenance instructions are designed for specialists, who – through their vocational training and experience – are knowledgeable in handling heating systems and DHW installations.

- Inform the user about the operation of the DHW tank, with a particular emphasis on safety aspects.
- Hand over the installation and maintenance instructions to the user to be retained near the heating system.

2.1 Correct use

Logalux ST400/3 -1000/3 DHW tanks are designed for heating and storing potable water. The requirements of the Potable Water Order (or local regulations) apply to potable water.

Only heat these DHW tanks with heating water in sealed systems.

2.2 Notes structure

Two levels of danger are identified and signified by the following terms:



WARNING!

RISK TO LIFE

Identifies possible dangers emanating from a product, which might lead to serious injury or death if appropriate care is not taken.



CAUTION!

RISK OF INJURY/ SYSTEM DAMAGE

Identifies potentially dangerous situations, which might lead to medium or slight injuries or to material losses.



USER NOTE

Tip for the optimum utilization and setting of the control(s) plus other useful information.

2.3 Please observe these notes



WARNING!

RISK TO HEALTH

Improper installation and maintenance work can contaminate the potable water.

- Install and clean the DHW tank hygienically and thoroughly and in accordance with current standards.



CAUTION!

TANK DAMAGE

due to unsatisfactory cleaning and maintenance.

- Carry out cleaning and maintenance at least every two years.
- Immediately remedy all faults to prevent system damage.



USER NOTE

Only use original Buderus spare parts. Losses caused by the use of parts not supplied by Buderus are excluded from the Buderus warranty.

2.4 Disposal

- Dispose of the DHW tank packaging in an environmentally responsible manner.
- Dispose of old DHW tanks in an environmentally responsible manner through an approved organization.

3 Product description

The Logalux ST400/3 – 1000/3 DHW tanks are mounted on a pallet at the factory. Covers and accessories are in a separate carton package.

The main components of the DHW tank are:

- DHW tank (Fig. 1, **Item 5**) with corrosion protection. The cathodic corrosion protection is the hygienic DUOCLEAN MKT thermo-glazing from Buderus and the magnesium anode mounted on the top access port (Fig. 2, **Item 1**).
- Tank jacket
The removable cover components are the lid (Fig. 1, **Item 1**), the access port cover (Fig. 1, **Item 8**), the two-piece cover strip (Fig. 1, **Item 6**) at the front and the three-piece cover strip at the back (Fig. 1, **Item 3**).
- Thermal insulation jacketing (Fig. 1, **Item 4**)
The thermal insulation mat is flexible foam with an outer cover of plastic.
- Top and bottom thermal insulation (Fig. 1, **Item 2**)
- Front thermal insulating disk (access port) (Fig. 1, **Item 7**)
- Front access port (Fig. 1, **Item 9**)
The manual access cover is an opening for maintenance inspection and cleaning.
- Sensor well for installation of a DHW temperature sensor (Fig. 2, page 6, **M**)
The boiler DHW thermostat regulates the set DHW temperature using this DHW temperature sensor (port).
- Coiled heat exchanger
The coil type heat exchanger (Fig. 2, **Item 3**, page 6) transfers the energy from the heating water to the DHW inside the tank. The tank content is evenly heated through.

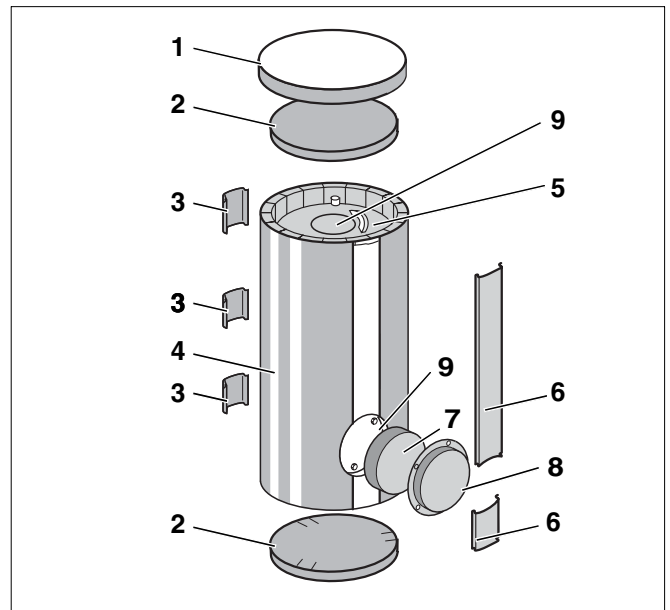


Fig. 1 Logalux ST400/3 – 1000/3 DHW tank

Item 1: Tank cover

Item 2: Thermal insulation disks

Item 3: Back cover strips

Item 4: Thermal insulation jacket

Item 5: DHW tank

Item 6: Front cover strip

Item 7: Access port in thermal insulation

Item 8: Access port cover

Item 9: Front access tank hand hole

4 Specifications

4.1 Dimensions and connections

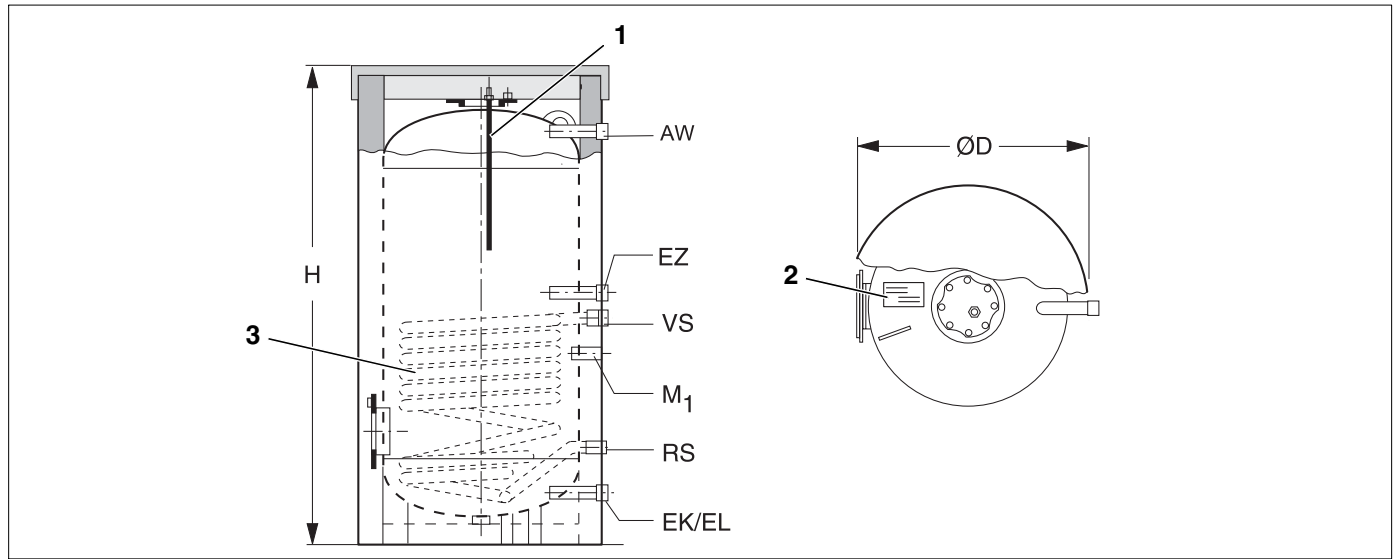


Fig. 2 Sectional view of DHW tanks

Item 1: Magnesium anode

Item 2: Nameplate

Item 3: Coil type heat exchanger

M_1 = sensing port DHW tank

EZ = recirculation inlet

AW = hot water outlet

EK/EL = cold water inlet and tank drain

VS = boiler supply

RS = boiler return

Type	ØD [in.]	H [in.]	Capacity [Gal.]	Weight [lbs.]	AW	VS RS	EK EL	EZ	Max. headtransfer capacity CM
ST 400/3 "US"	33½	61	103	407	1¼"	1¼"	1¼"	¾"	225
ST 500/3 "US"	33½	73	129	486	1¼"	1¼"	1¼"	¾"	260
ST 750/3 "US"	39¼	73	194	702	1¼"	1¼"	1½"	¾"	350
ST 1000/3 "US"	43¼	75½	258	893	1½"	1¼"	1½"	¾"	425

Tab. 1 Technical specification of the Logalux ST DHW tank

4.2 Safety limits



TANK DAMAGE

through exceeding limits.

CAUTION!

- For safety reasons DO NOT exceed the limits stated in "Tab 3".

Approved maximum values	Temperature	Operating pressure	On-site test pressure ²
	°C (°F)	bar (psi)	bar (psi)
Heating water	100 (212)	6 (80) ¹	N/A ¹
DHW	95 (203)	10 (145 ³)	10 (145 ³)

Tab. 2 DHW tank safety limits

¹ Subject to the individual heating system protection (e.g. boiler relief valve and diaphragm expansion vessel).

² Operating and test pressure are overpressure.

³ Maximum 100 psi in Massachusetts.

5 Transporting and installing DHW tank

5.1 DHW tank handling



USER NOTE

- Transport the DHW tank fastened to the pallet on a transport dolly.

Use suitable equipment to move the DHW tank. Secure the DHW tank against slipping.

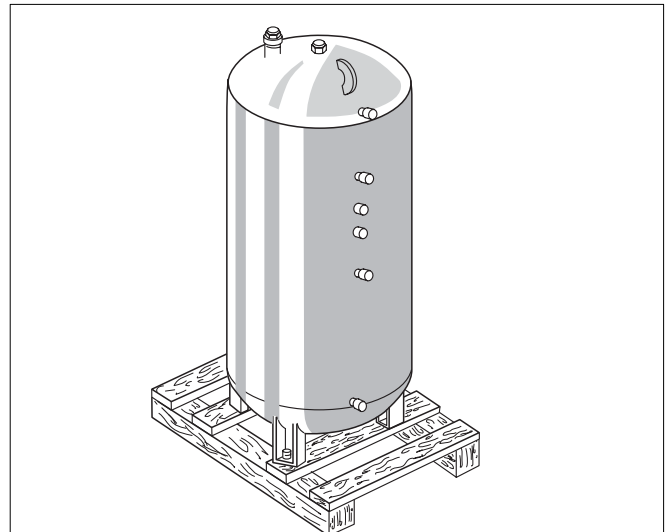


Fig. 3 Moving DHW tank on pallet (general layout)

5.2 Positioning the DHW tank

The DHW tank may be placed either on the right or left side of the boiler.

Observe the minimum clearances recommended for installation and maintenance when installing the DHW tank (Fig. 4). Maintain at least 6" clearance from combustible surfaces.

The floor must be level and able to support a full tank.



TANK DAMAGE

through frost.

- CAUTION!**
- The boiler room must be dry and safe from the risk of frost.

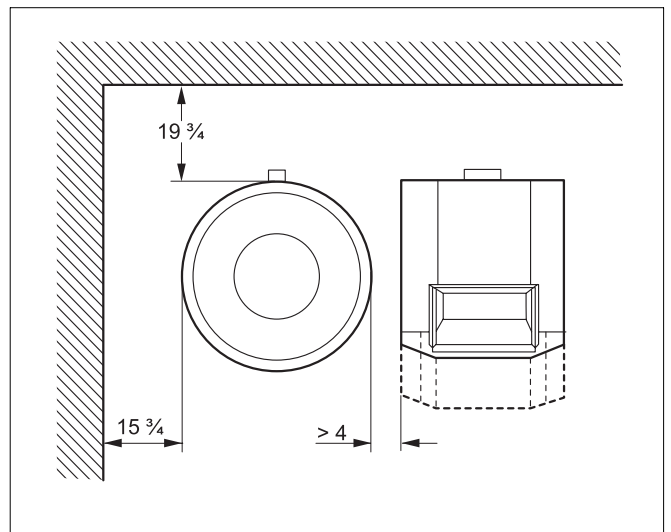


Fig. 4 Positioning the DHW tank (general layout)
(dimensions in inches)

6 DHW tank installation

6.1 Installing the DHW pipework

Please observe the following note regarding the connection of the DHW tank to the pipework. These notes are important for trouble free operation.



CAUTION!

TANK DAMAGE

Protective sleeves are inserted in the AW, EZ and EK connectors. They protect the enameled faces of the connectors from corrosion.

- Keep these protective sleeves inserted.



WARNING!

RISK TO HEALTH

Improper installation work can contaminate the potable water.

- Install the DHW tank hygienically in accordance with current standards.
- Rinse the DHW tank and pipework thoroughly with potable water.



USER NOTE

If a back flow prewater is required per local code, an expansion vessel thermal on the DHW piping must be installed.



CAUTION!

SYSTEM DAMAGE

due to incorrect installation.

- Observe all current standards and guidelines applicable to the installation and operation of this DHW tank as applicable in your state or per local jurisdiction.



USER NOTE

The safety equipment on the DHW tank must be adapted to the output of the boiler if the boiler exceeds 100.000 Btu/hr.

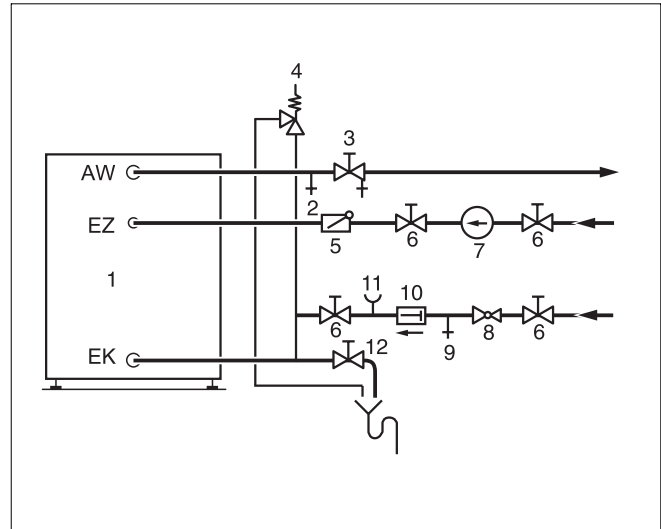


Fig. 5 Installation diagram (general layout)

Item 1: DHW tank

Item 2: Inlet and outlet valve

Item 3: Stop valve with drain valve

Item 4: P & T valve

Item 5: Check valve

Item 6: Isolation valve

Item 7: Circulation pump

Item 8: Pressure reducer valve (optional)

Item 9: Purge valve

Item 10: Non-return valve

Item 11: Pressure gauge (optional)

Item 12: Tank drain

Legend:

AW: Domestic hot water outlet

EZ: DHW recirculation inlet

EK: Cold water inlet

- Attach the included brass tees to the DHW outlet and cold water inlet/drain connections. Install the included pressure & temperature valve on the NPT $\frac{3}{4}$ connection of the brass tee on the DHW outlet connection. Install the included drain valve on the NPT $\frac{3}{4}$ connection of the brass tee on the cold water inlet/drain connection.
- If a Logamatic or Goldline SP30D control is used, the installation is described in Section 6.3, page 9.
- If a Honeywell Aquastat is used as the DHW control, the installation is described in Section 6.4, page 10.
- Refer to Table 1 and select a P & T valve with a rating at least equal to the maximum heat transfer capacity of the tank

**SYSTEM DAMAGE**

through leaking connections.

- CAUTION!**
- Connect all connection pipes free from stress.
 - Equip and install the DHW pipework in accordance with state.

6.2 Checking the magnesium anode connection

- Check that the ground wire (Fig. 6, **Item 1**) for the magnesium anode (Fig. 6, **Item 2**) is correctly connected.

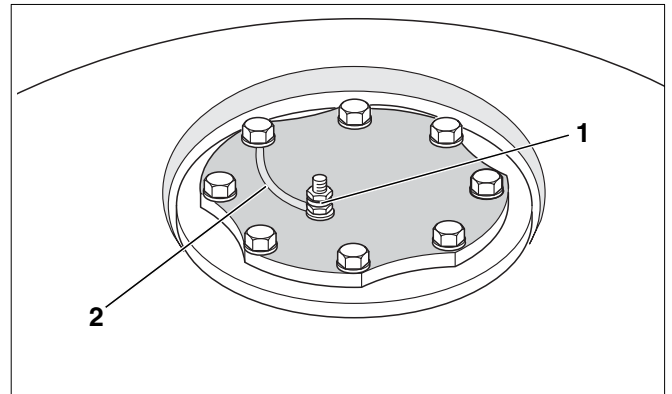


Fig. 6 Checking the magnesium anode connection

Item 1: Magnesium anode

Item 2: Ground wire

6.3 Installing the hot-water temperature sensor (Logamatic or SP34D Control)

If a Buderus Logamatic control or Goldline SP34D control is used, install the DHW temperature sensor supplied with the Logamatic or SP34D as follows:

- Insert the sensor pack including the blank spacers and wavy compensating spring (Fig. 7, **Item 1 to 4**) until it bottoms out inside the sensor well (Fig. 7, **Item 5**). During insertion the plastic spiral (Fig. 7, **Item 3**), which holds the sensor together, slides back automatically.

The spring (Fig. 7, **Item 4**) ensures contact between the sensor well and the sensor surfaces and so a reliable temperature transfer.

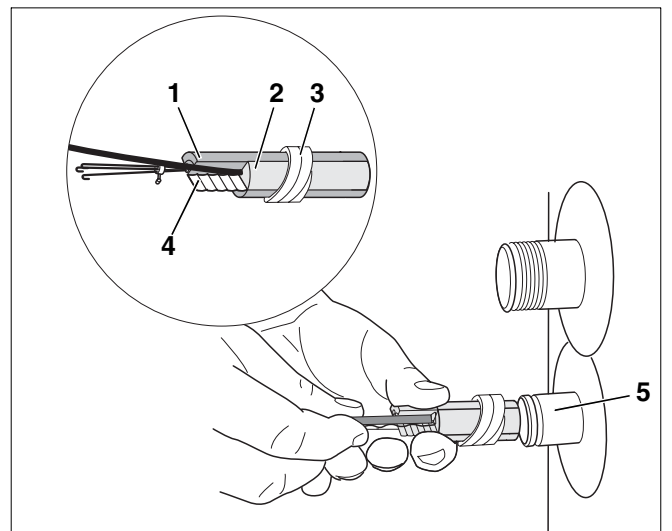


Fig. 7 Installing the DHW temperature sensor package

Item 1: Blanking piece

Item 2: Quadrant temperature sensor (or SP34D sensor)

Item 3: Plastic spiral

Item 4: Compensating spring

Item 5: Immersion well (M1)

- Push the sensor holder clip (Fig. 8, **Item 1**) from the side over the sensor well (Fig. 8, **Item 2**).
- Route the sensor lead to the boiler or control panel (Logamatic or SP34D control) and ensure the lead is not strained. This lead must not be in contact with any hot boiler parts.

**USER NOTE**

See the wiring diagram supplied for the electrical connection of the temperature sensor.

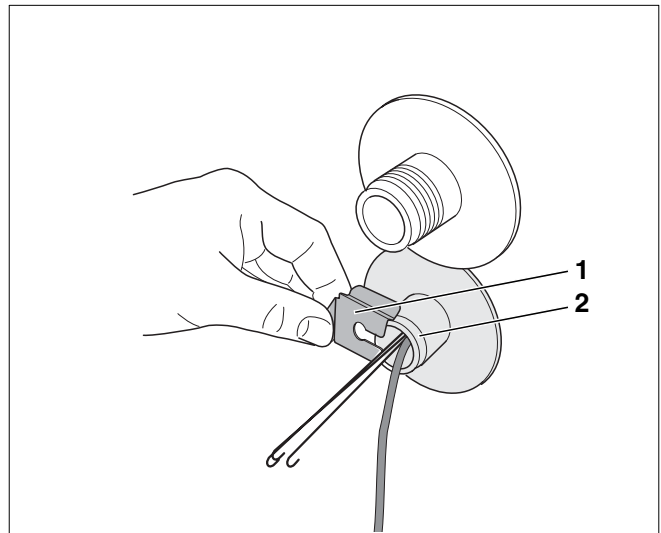


Fig. 8 Installing the sensor holder clip

Item 1: Sensor holder clip

Item 2: Immersion well

6.4 Installing Honeywell Aquastat

- Remove cover from Aquastat (Fig. 9, **Item 2**). Slacken the hex bolt on the top.
- Screw retainer (Fig. 9, **Item 6**) on Aquastat with two self-tapping screws (remove existing fastener if necessary).
- Insert temperature capillary with clamping spring and possibly blank spacers (Fig. 9, **Item 4 and 5**) fully into the sensor well (**M**) (Fig. 9, **Item 3**).
- Screw Aquastat (Fig. 9, **Item 2**) to DHW tank with two self-tapping screws (Fig. 9, **Item 1**). First drill two small holes in the cover beside the M1 connection.

**RISK TO LIFE**

from electric shock.

WARNING!

- Before you work on the system: Isolate the system from the electrical system.

**USER NOTE**

Connect the electrical power and set the temperature as shown in the manual supplied with the Aquastat.

- Replace cover in Aquastat.

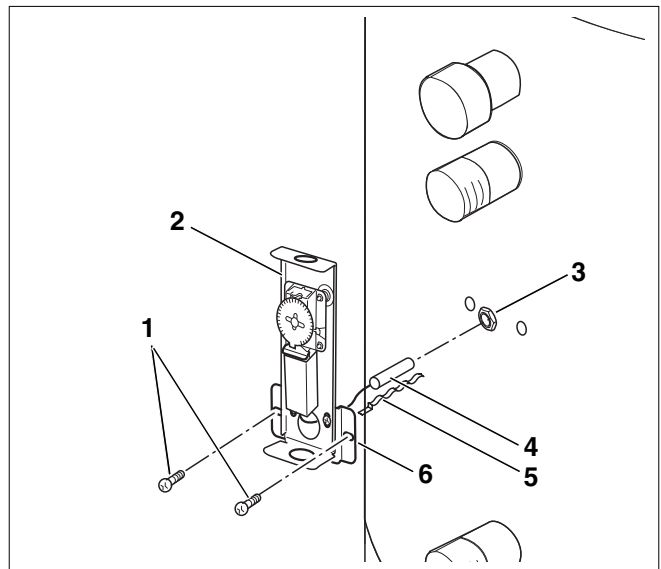


Fig. 9 Installing Aquastat

Item 1: Self-tapping screws C-ST 4.2 × 13 mm

Item 2: Aquastat

Item 3: Sensor well (**M1** connection)

Item 4: Temperature capillary

Item 5: Clamping spring

Item 6: Holder/retainer

6.5 Install thermal insulation



USER NOTE

The thermal insulating jacket comes in two parts.

The thermal insulating jacket is best installed at approximately room temperature conditions. Lightly tap the thermal insulating jackets towards the two ends to make it easier to pull the ends together.

First attach the sealing strip to the connection lines and secure with installation aid (U-bar) (Fig. 10, **Item 1**) if necessary.

- Place slotted thermal insulating disk on the floor with the slots near the tank feet (Fig. 10).
- Place the perforated thermal insulating jackets around the tank so the holes fit the connections (Fig. 10).
- Pull the ends of the thermal insulating jackets together and close them (Fig. 10).
- Position thermal insulating disk before front access port (Fig. 11).
- Place 4 snap nuts over the holes in the thermal insulating foil (Fig. 11, **Item 2**).
- Screw cover over access port with 4 sheet metal screws (Fig. 11, **Item 1**).

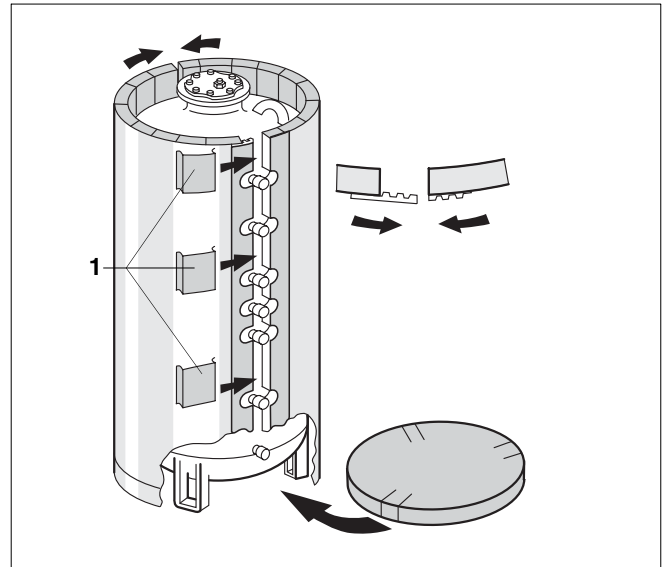


Fig. 10 Position thermal insulating disk and thermal insulating jackets

Item 1: Installation aid

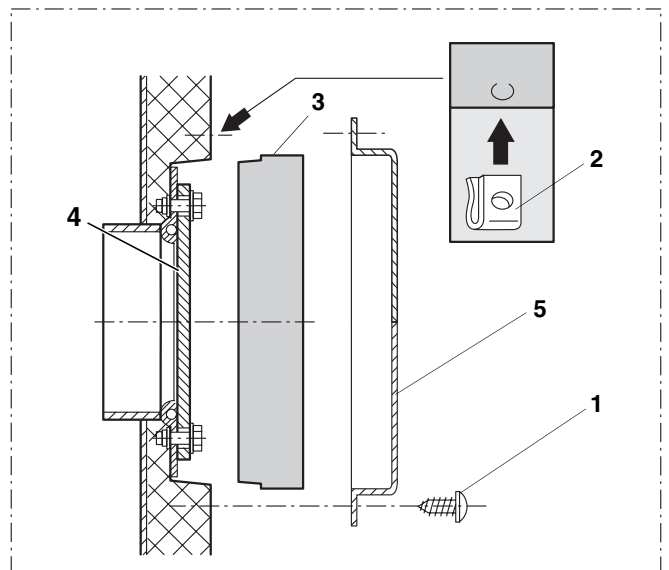


Fig. 11 Attaching thermal insulating disk and thermal insulating jacket

Item 1: Sheet metal screw

Item 2: Snap nut

Item 3: Thermal insulation disk

Item 4: Access hand hole cover

Item 5: Outer tank cover

- Place cover strip (Fig. 12, **Item 4**) on the sealing strip of the thermal insulating jacket.
- Position rectangular thermal insulating plug (Fig. 12, **Item 3**) in the cutout from the inside.
- Position round thermal insulating plugs in the holes for the connections that are not required in the thermal insulating jacket.
- Place thermal insulating disk (Fig. 12, **Item 1**) on the top access port so it contacts the edge of the thermal insulating jacket.
- Place tank cover (plastic cover, Fig. 12, **Item 2**) over the thermal insulating disk and the edge of the thermal insulating jacket.

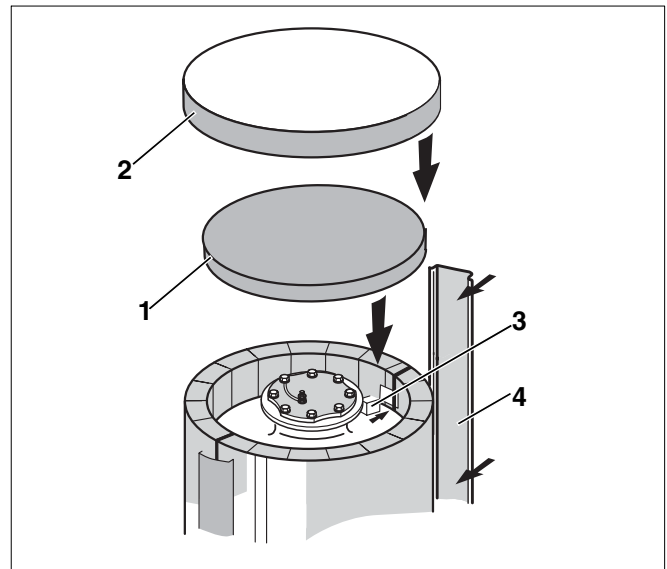


Fig. 12 Thermal insulation – top access port

Item 1: Thermal insulation disk

Item 2: Tank cover

Item 3: Thermal insulating plug

Item 4: Cover strip

- Remove the nameplate from the envelope with the technical documentation.
- Pull protective foil off the back of the nameplate and stick the nameplate under the existing smaller nameplate (Fig. 13).

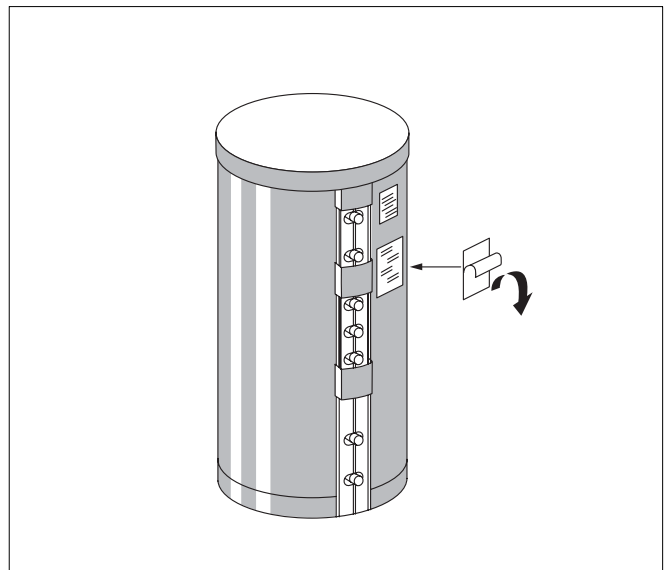


Fig. 13 Attaching nameplate

7 Start-up and shutdown

7.1 Starting the DHW tank

Before placing the DHW tank into use, check it for soundness to avoid leaks occurring during operation.



USER NOTE

- Carry out the leak test exclusively with potable water. The on-site test pressure on the DHW side must not be higher than 10 bar (145 psi).
- Open the highest faucet to vent the DHW tank.
- Open the shut-off valve for the cold water inlet EK (Fig. 14, **Item 1**) to fill the DHW tank.
- Before heating up check whether the boiler, DHW tank and pipework are filled with water. Open the highest faucet for this.
- Check all connections, pipework and the access port for leaks.

7.1.1 Operating tips

Inform the user that:

- The local heating contractor should be notified if the high limit safety trips on the boiler frequently responds.
- The pressure and temperature valve function should be checked annually by manually opening it.
- The P & T valve blow-off line (Fig. 14, **Item 2**) must always be kept open and piped full port to a nearby floor drain.

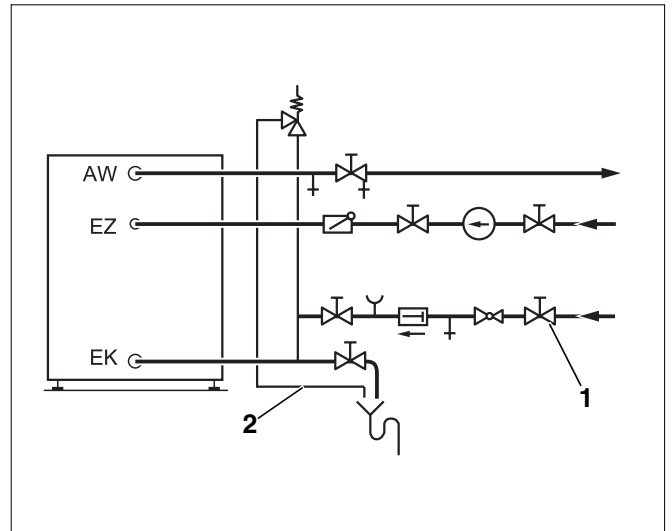


Fig. 14 Installation diagram (general layout)

Item 1: Shut-off valve for cold water inlet

Item 2: Blow-off line of the P & T valve

AW: Domestic hot water outlet

EZ: DHW recirculation inlet

EK: Cold water inlet



CAUTION

TANK DAMAGE

The DHW tank may be destroyed by unacceptably high pressure if the safety valve is closed.

- Always keep the blow-off line of the P & T valve (Fig. 14, **Item 2**) open and unobstructed and piped to nearby floor drain .



USER NOTE

For operating information (e.g. setting the DHW temperature) check the control panel operating instructions.

7.2 Shutdown tips

In case of longer periods away from home (e.g. during a holiday) we recommend the following:

- Keep the DHW tank in use.
- Activate the holiday function on the control panel or select the lowest possible DHW temperature.

Should it be necessary to take the DHW tank out of use, observe the hygiene requirements for DHW system (flushing of pipework) currently applicable in your state or jurisdiction.



CAUTION

TANK DAMAGE

Corrosion damage may occur if the DHW tank has to remain empty for several days.

- Dry the inside of the DHW tank well (e.g. with hot air) and keep the manual access cover open.

8 Maintenance

Generally, we recommend having the DHW tank checked and cleaned by a qualified contractor at least every two years. Please inform the user accordingly.

Shorter cleaning intervals should be chosen under unfavorable operating conditions, such as hard or very hard water and/or high operating temperatures.



CAUTION!

TANK DAMAGE

due to unsatisfactory cleaning and maintenance.

- Carry out cleaning and maintenance at least every two years.
- Remedy all faults immediately to prevent possible damage.

8.1 Preparing the DHW tank for maintenance

- Disconnect your heating system from the electricity supply.
- Drain the DHW tank. Shut off so the cold water feed and open the drain EL. Open the air vent valve or the highest tap to vent the system.
- Remove the top cover (Fig. 15, **Item 2**). Remove the four screws on the side.
- Remove the thermal insulating disk (Fig. 15, **Item 1**) from the front of the access cover.

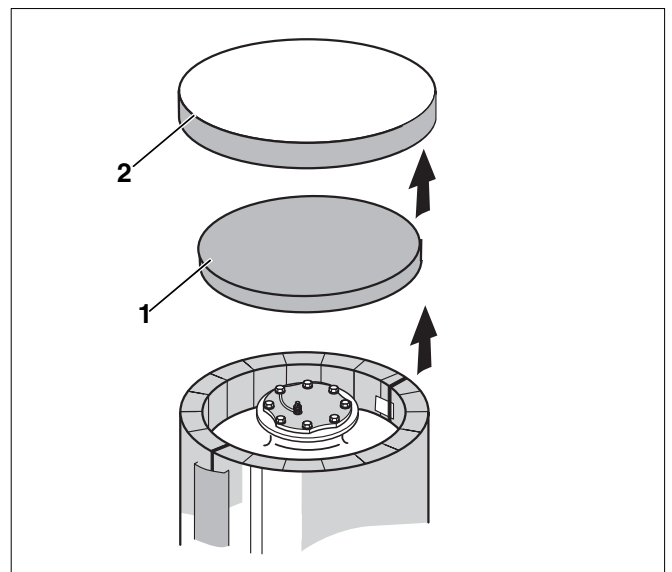


Fig. 15 Thermal insulation – top access port

Item 1: Thermal insulation disk

Item 2: Tank cover

- Remove hexagon bolts (Fig. 16, **Item 1**) from the manual access cover (Fig. 16, **Item 3**).
- Remove the access cover, transport handle (Fig. 16, **Item 2**) and access cover gasket (Fig. 16, **Item 4**) from the DHW tank.

8.2 Cleaning the DHW tank

- Check the DHW tank interior for scale deposits (calcium).



SYSTEM DAMAGE

through damaged surface finish.

CAUTION!

- Never use hard objects or objects with sharp edges to clean the interior walls of the DHW tank.

Should scale deposits be discovered inside the DHW tank, proceed as follows:

- Hose down the interior of the DHW tank with a "hard" cold water jet (approx. 58 – 72 psi pressure) (Fig. 17).

You can increase the cleaning effect of the jet by heating up the DHW tank before cleaning. The thermo-shock effect releases scale deposits more easily from the coil type heat exchanger. Remove the residues with a wet & dry vacuum cleaner with plastic suction tube or flush debris through the tank drain.

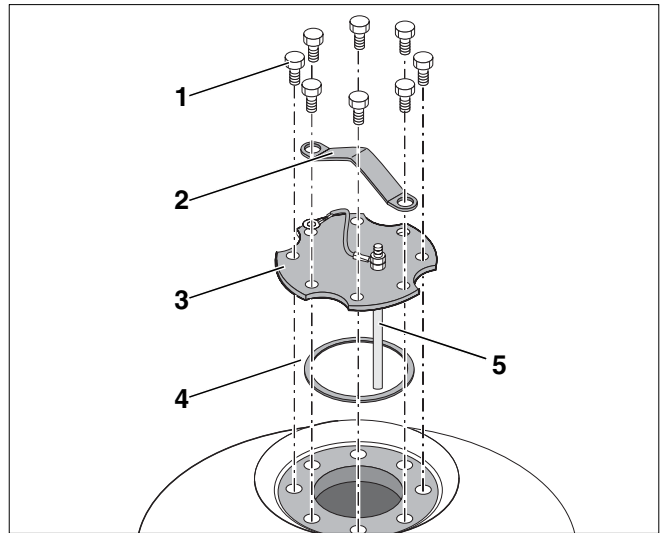


Fig. 16 Removing the access cover

Item 1: Hexagon bolts

Item 2: Transport handle

Item 3: Hand hole cover

Item 4: Manual access cover gasket

Item 5: Magnesium anode

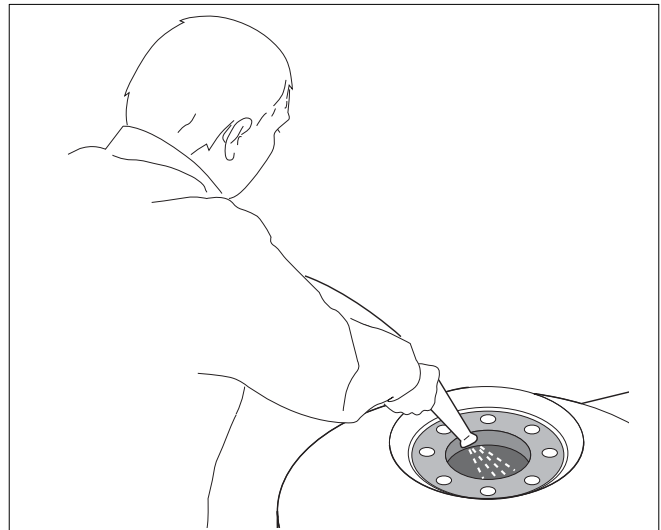


Fig. 17 Hosing down the inside of the DHW tank

8.3 Checking the magnesium anode

The magnesium anode is a sacrificial anode, which is consumed by its use during the operation of the DHW tank. Check the magnesium anode diameter annually.

Warranty claims for the DHW tank will not be accepted if the magnesium anode is not serviced on an annual basis.

- Check magnesium anode (Fig. 18, **Item 1**) for decay. Replace the magnesium anode if the diameter has become reduced to approx. 1/2" to 3/4".



USER NOTE

Never bring the magnesium anode surface into contact with oil or grease. Keep everything clean.

8.4 Replacing the magnesium anode

- Remove the M8 nut (Fig. 18, **Item 10**), to release the ground wire eyelet (Fig. 18, **Item 8**).
- Remove M8 nut (Fig. 18, **Item 7**).
- Remove the manual access cover (Fig. 18, **Item 3**) from the magnesium anode (Fig. 18, **Item 1**).
- Replace the magnesium anode.
- Fit the new magnesium anode with its associated small parts, see Fig. 18.

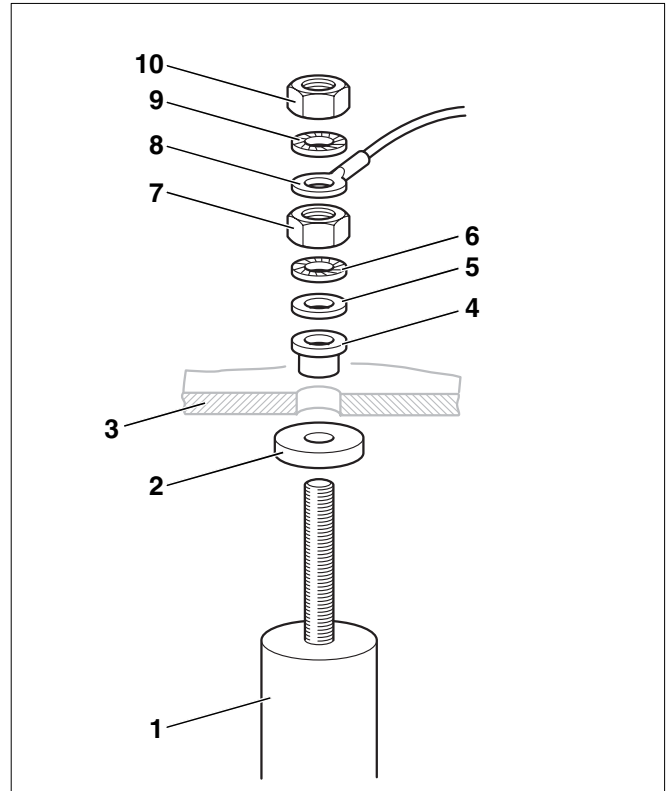


Fig. 18 Replacing the magnesium anode

Item 1: Magnesium anode

Item 2: Gasket

Item 3: Access port cover

Item 4: Insulating sleeve

Item 5: Washer

Item 6: Lock washer

Item 7: M8 nut

Item 8: Grounding wire eyelet

Item 9: Lock washer

Item 10: M8 nut

8.4.1 Checking magnesium anode with a multimeter on annual basis

Proceed as follows to check the magnesium anode:

- Disconnect ground wire (Fig. 19, **Item 3**) on the magnesium anode or on the DHW tank.
- Set multimeter to Dc mA (milliamperes).
- Connect black multimeter measuring wire (Fig. 19, **Item 6**) to the threaded pin on the DHW tank (Fig. 19, **Item 7**).
- Connect red multimeter measuring wire (Fig. 19, **Item 5**) to the magnesium anode.
- Make sure that all connections have good metal-to-metal contact.



USER NOTE

The DHW tank must be full of water while testing the anode.

- If the anode current is 0.3 mA to 30 mA, the anode is working correctly.
- Note the annual measurements in Table 3.

Enter the measured values into the table:

Date	Measurement	Service Company/Signature

Tab. 3 Measurement results

- Reconnect the wiring after every test.



USER NOTE

If the anode current changes by none than 10 % (up or down) from the previous test, open up tank access cover and visually inspect the anode rod.

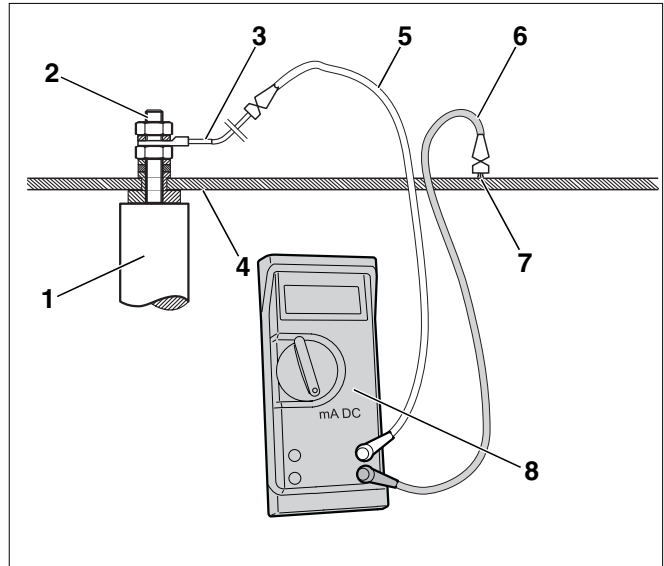


Fig. 19 Check magnesium anode with multimeter

- Item 1:** Magnesium anode
- Item 2:** M8 threaded pin
- Item 3:** Ground wire
- Item 4:** Access port cover
- Item 5:** Red multimeter measurement wire
- Item 6:** Black multimeter measurement wire
- Item 7:** Threaded pin on DHW tank
- Item 8:** Digital multimeter

8.5 Returning the DHW tank into use after cleaning

- Re-insert manual access cover.
While doing this, observe the correct orientation of the manual access cover gasket: The imprint "Deckelseite" must point towards the manual access cover.



SYSTEM DAMAGE

through faulty gasket.

- CAUTION!**
- After cleaning, we recommend you use a new manual access cover gasket (Fig. 20, **Item 4**) to prevent the DHW tank from leaking.

- Screw in hexagon bolts (Fig. 20, **Item 1**) hand tight in the access port cover and install the transport handle (Fig. 20, **Item 2**).
- Tighten hexagon bolts (Fig. 20, **Item 1**) with a wrench by a three quarter turn (equal to the recommended torque of 40 Nm).

- Fill the DHW tank and restart the heating system.
- Check all connections and the manual access cover for leaks.
- Insert the thermal insulating disk (Fig. 21, **Item 1**) in front of the access cover.
- Position top cover (Fig. 21, **Item 2**) on the DHW tank and screw in place with four screws from the side.

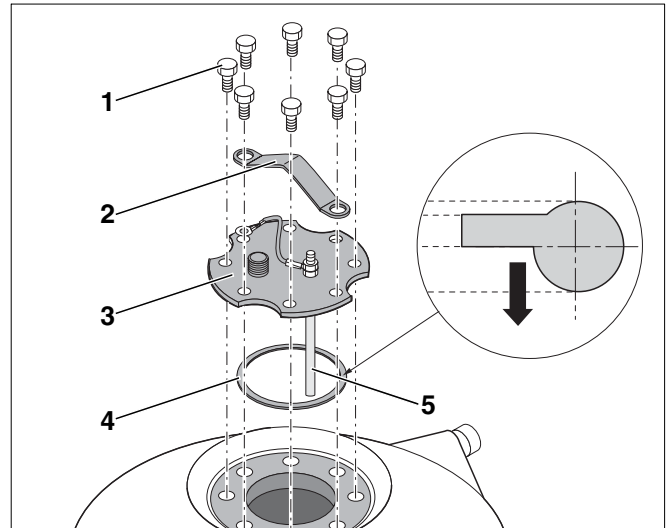


Fig. 20 Inserting top access cover

Item 1: Hexagon bolts

Item 2: Transport handle

Item 3: Access port cover

Item 4: Manual access cover gasket

Item 5: Magnesium anode

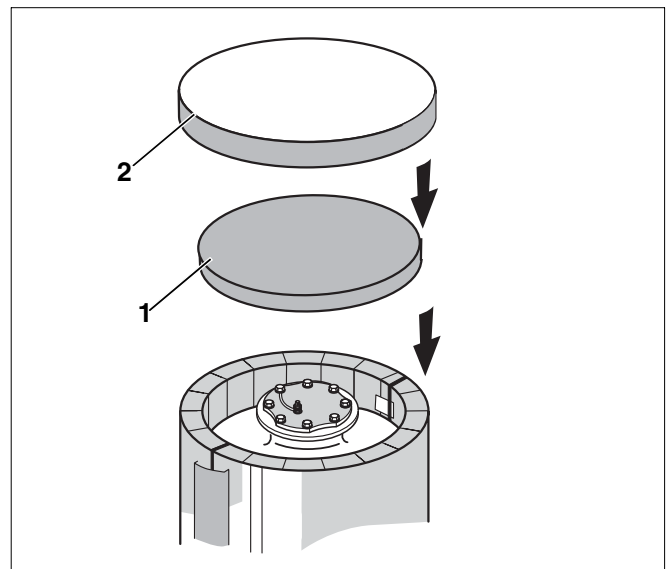


Fig. 21 Thermal insulation – top access port

Item 1: Thermal insulation disk

Item 2: Tank cover

Your local heating contractor:

Buderus

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